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Editorial Notes

The Conjoint Conference

It is with considerable pleasure that the "Gas Journal" publishes for the first time a reference to the Annual Report of the Conjoint Conference of Public Utility Associations.

The Conjoint Conference does not exist for the purpose of advertising itself; it pursues its steady path of solid and unostentatious achievement, and, still in its infancy, it shyly and for the first time offers for publication a report of which many associations much older in years might well be envious. It is our view that the aims and objects of this admirable organization are still not sufficiently appreciated by the Industry, and we plead no excuse for blowing the trumpet of those who refuse to blow their own.

There has been no more remarkable and significant development in these post-war years than the growth of central associations; increasingly has it been appreciated that through the formation of such organizations industries can obtain the benefits of collective experience and a unity of purpose without nationalization or bureaucratic dictatorship. At the end of the War the great industries of gas, electricity, and water each had its own central association through which each was able to speak as an industry on important matters affecting its particular interests. It was soon appreciated, however, that in a vast number of matters ancillary to the main purpose of selling a commodity, the interests of each of the three great utilities were identical. The Conjoint Conference was therefore created, and represents a further step in the evolution of central associations, being a conference of associations to deal solely with those matters in which the interest of each association is identical.

The Report of the Conjoint Conference is a lengthy document which indicates the large variety of subjects which can properly be regarded as falling under this head. While, however, we publish on other pages of this issue the illuminating comments of the Chairman, Lord Mount Temple, in introducing it, it will probably better serve our readers' interests if we refer here to points in the Report which mainly affect our Industry, rather than reproduce it elsewhere in full.

Since gas, water, and electricity undertakers alike depend upon their right to break open highways, it is natural that Parliament should, with slight variations, have applied the same statutory code to each of these undertakings. It is natural, therefore, that negotiations with the central organizations of the Highway Authorities should be undertaken by the Conference. The lot of a Highway Authority in these days of traffic congestion is, like that of the Gilbertian policeman, "not a happy one," and it is not surprising that their demands upon public utilities should become more exacting, feeling, as they do, that a highway code framed in 1847 may not be entirely suitable to modern needs. It is essential, therefore, that some organization representing gas, water, and electricity should be in existence, and it was through the medium of the Conjoint Conference that these interests have been able to exchange their views on the matter, and so far as gas and electricity are concerned to present a united front to the Highway Authorities. After considerable success, negotiations between the gas and electricity industries have, owing to an unfortunate resolution of the County Councils Association, been temporarily suspended, but it is inconceivable that a matter of such vital importance to the country could be allowed to stagnate, and it is most satisfactory to know that when renewed negotiations are opened, the three great industries will be prepared to speak with one voice through the Conjoint Conference.

Rating

On another matter no less important there is a practical identity of interest among the three industries—*i.e.*, Rating. Provisions regarding the valuation of public utility undertakings for rating were contained in the original Bill upon which the Rating and Valuation Act, 1925, was founded, but in the traditional excuse of lack of Parliamentary time these provisions were excluded during the passage of the Bill through Parliament. No adequate provisions are contained in the Act, therefore, regarding the assessment of gas, water, and electricity works, all of which are assessed upon the profits basis in accordance with the well established formula.

In addition to sharing in a like basis of assessment, the majority of public utility undertakings possess distribution systems extending into the areas of more than one Rating Authority. Each industry, therefore, has the same interest in checking any attempt at piecemeal assessment by the various Rating Authorities into whose area they extend.

The Conjoint Conference has already made representations to the Central Valuation Committee, and it was

largely the great impression which the unity of the three industries made that led the Committee to issue a series of useful recommendations which have already proved of great value. It is satisfactory to learn that the Conjoint Conference is in the near future to make further representations which, if accepted, will undoubtedly do much to ensure fair and impartial assessments. Since these representations may involve an alteration of the law by Statutory action, it is gratifying to know that the three interests are in entire agreement in the matter. Failing such agreement between the industries it is difficult to conceive how such legislation could be secured.

There is a similar unity of interest with regard to Drainage Rate assessment, which, since the passing of the Land Drainage Act, 1930, has presented a problem of a difficult character to public utilities. The Act provides no basis upon which such undertakings are to be assessed, and it remains for the Conjoint Conference to negotiate some satisfactory method of valuation and thereby prevent inconsistencies and inequalities throughout the country.

Public and Private Legislation

It cannot be denied that the co-operation of the three public utilities has greatly enhanced the prestige of each industry, and this is nowhere more aptly illustrated than in the sphere of public and private legislation. With regard to public legislation, it is instructive to consider the Public Health Act, 1875, upon which for half a century the local administration of our country has been based. In that Act, protection may be found in favour of railways, canals, docks, and harbours, but the organizations supplying light and water to the community were either ignored or placed entirely at the mercy of the Local Authority. The position is vastly different to-day. In Acts such as the Public Health Act, 1925, the Roads Improvement Act, 1925, the Restriction of Ribbon Development Act, 1935 (to name only a few), the Conjoint Conference has been consulted by the Government, with the result that public utilities have been adequately protected. The Town Planning Act, 1932, and the Housing Act, 1935, although the protection afforded is not so great as might be desired, do contain most valuable provisions in favour of public utilities, whereas similar Acts in the past have contained none.

In private legislation, both by negotiation and by opposition in Parliament, a weight of precedent in favour of adequate protection has been obtained, and it is most satisfactory to learn that in recent County Council Bills these precedents have been followed by the promoters, and that from the very start the interests and rights of public utilities have been acknowledged and protected.

It will readily be recognized that there are certain matters with regard to which the interests of gas, water, and electricity are similar, which, nevertheless, require the separate consideration of each industry. Among these is the ever-present problem of the coal industry. Even in these areas, however, the Conjoint Conference can do much to create an atmosphere suitable for the presentation by each interest of its own particular case.

Coal

The Conjoint Conference has repeatedly protested against the whole policy which underlies Part I. of the Coal Mines Act, 1930, which Sir David Milne-Watson, at the Annual General Meeting of his Company last Friday, declared to be " the root of the trouble." There will be general agreement throughout the whole of the Gas Industry with Sir David's condemnation of the policy of encouraging by Statute the continuation of the existence of unprofitable and inefficient coal mines. It is significant that on the same day Sir Francis Fladgate, in his speech as Chairman of the London Power Company, referred to the anxiety caused by the state of the coal trade.

On many deputations to the Mines Department the Conjoint Conference has expressed its distrust of the schemes authorized by the Coal Mines Act; these deputations have emphasized the confusion caused by the quota system, and have protested against the unfair discrimination in coal prices against public utilities. On what principle of equity is it possible to defend the legal imposition of one price for coal to gas-works and another and lower price for similar coal consigned to other destinations? The right of appeal to one of the Committees of Investigation set up by the Act is valueless; and even if the objector could obtain the necessary information to establish a case, the Committee have, as Sir David observes, neither judicial or executive power.

The protests of the public utilities on this question have in the past been ignored, yet it is to them that the coal industry turns in its difficulties, and nobly have they responded. It is to be hoped that the Mines Department and the coal industry will in the future be more disposed to hear the other side, and it is particularly fortunate that there is in existence a body, such as the Conjoint Conference, which can if necessary be utilized to state these views on behalf of its members.

It is also fortunate that the Conjoint Conference has in its President, Lord Mount Temple, a distinguished member of the House of Lords who has in the past expressed in Parliament the apprehensions of the public utilities as to the workings of the Coal Mines Act. It is clear from his recent communication to *The Times* on the subject that Lord Mount Temple does not intend to let the matter drop.

We have dealt with these matters somewhat fully because we feel that the principle of co-operation which underlies the work of the Conjoint Conference will play an increasingly important part in the future. At present, so far as gas and electricity are concerned, competition is the order of the day, and of this, given a fair field and no favour, the Gas Industry has nothing to fear. We doubt, however, whether future generations will acquiesce in the inevitable waste of energy which unrestricted competition must in the end involve. Sooner or later it will surely be insisted that the efforts of each industry shall be concentrated upon those matters in which it undoubtedly predominates. If this is so, no more useful and effective principles of co-operation could be devised than those represented by the Conjoint Conference.

The Best Propaganda

Most impressive figures were presented at last Friday's Annual General Meeting of the Gas Light and Coke Company, and they were submitted in the most impressive manner by Sir David Milne-Watson, the Governor—that is to say, as a " plain, unvarnished tale." Look at them how one may, the results of the past year's operations of the Company are full of encouragement, both for the proprietors and for the Gas Industry as a whole. For this reason, we are particularly gratified at the decision of the Directors to bring some of the more striking points from the Governor's address to the notice of the general public by means of announcements in display form occupying big spaces on prominent pages in papers circulating throughout the country. The broadcasting of easily understandable facts of this kind, free of any complications which might have the effect of dimming their significance, is, of course, the best possible propaganda, and

for the public-spirited step which the Company have taken they are deserving of the thanks of the Industry. These thanks are none the less due because it happens to be only undertakings with the resources of the Gas Light and Coke Company, or resources comparable with theirs, that can launch out in propaganda on so large a scale and of so wide a character. A reproduction of the advertisement will be found on a later page.

Campaigns following similar lines, but on a more restricted scale, could be entered upon by others of the larger undertakings who may not yet have considered such a scheme, and we feel sure they would be productive of much good. Just a few arresting figures, in short paragraphs—mark well, with plenty of white spaces interspersed throughout; how often in Press publicity is the importance of these white spaces overlooked!—cannot fail to find their goal. The full details are necessary for the more closely interested, but by all means let us have the snappy, well-displayed paragraphs for impressing the importance of our great Industry upon the public mind.

Such methods as we now refer to as having been adopted by the Gas Light and Coke Company—who "never let London down"—are especially gratifying to us because of the strong views which we hold as to the importance to the Gas Industry of "keeping in the news." This is the way to secure full realization of services rendered, and thereby an increased measure of popularity. Turning back to the issue of the "JOURNAL" published just two months ago, we find an editorial note from which the following is culled: "The purchasing power of the public is expanding, and large numbers of small investors will once more be looking out for a suitable resting-place for their hard-earned money. What resting-place can be more suitable than the Gas Industry? None—provided that it combines with its sense of security a 'certain liveliness.' . . . Admittedly, the steady nature of the Gas Industry limits 'news' opportunities, but that is merely an argument for the resolute exploitation of such as do occur." At that time we had in mind the appeal of the Industry to investors, but everything that was then advanced from this point of view is equally applicable to an appeal to the general public. With the magnificent example of the Gas Light and Coke Company before us, let us exhort the Gas Industry once again to—"Keep in the news."

Some Striking Figures

Now what are these figures which the Gas Light and Coke Company have thus been bringing to the notice of the public? They are the results of the Company's working over a period of which Sir David Milne-Watson said: "We have never enjoyed a more encouraging year, nor one more indicative of the great and progressive nature of our business." There will be few "JOURNAL" readers who will not wish to peruse carefully the Governor's speech to the proprietors, which is reproduced verbatim on later pages of this issue, and so there is no need to go in great detail here through London's new gas records.

But it must be said that the figures are extraordinary, both from the point of view of magnitude and because of the ability, efficiency, zeal, and energy which must have contributed to their realization. As the Governor said, an increase in output of gas of 1·1% may not seem very much when expressed as a percentage, but see what it represents in actual quantity, in the case of an undertaking of the huge proportions of the Gas Light and Coke Company. No less than 515 million cu.ft., which is nearly equal to the entire annual make of gas at Margate (532 millions), as shown in the latest edition of the "JOURNAL" Calendar and Directory. Or, to quote the Governor, "expressed in terms of heat energy, it is equal to 75 million units of electricity, and there are few suppliers of electricity in our area who reached that total for their whole annual output—not merely their increase." Here, indeed, is a talking point, especially when it is considered in conjunction with the fact that new gas appliances, which are far more economical in gas consumption, are displacing older models at an unprecedented rate. No one will feel inclined to challenge the deduction of Sir David Milne-Watson that these facts do seem to show that the modern methods adopted by the Company for selling gas have been thoroughly justified. The number of new appliances supplied by the Company in 1935 was well over 600,000. In other words, they have installed them at the rate of more than one a minute throughout the whole of the year. With all this activity, it is not surprising to learn that the number of consumers increased by 37,342, to the enormous total of 1,328,653.

The cheering recital extends to coke, another of the Company's products, which ever assumes greater importance. The sales of coke for the past year reached record figures, so that the Company are able at the same time to increase their business in both gas and coke. This is a point that is worthy of note, touching, as it does, a matter which has frequently been discussed in the pages of the "JOURNAL." Then there is the use of gas for industrial purposes, which has such a strong bearing upon future prosperity. See what the Governor had to say about this: "We now have over 19,000 factories using gas for technical processes in our area. Our industrial appliances workshop continues to do good service, co-operating closely with the manufacturers and supplying in 1935 appliances seven times the value of ten years ago."

One more increase to which reference should be made is in the number of street lamps in the Company's area. During the year they have been successful in obtaining sixteen new contracts for gas street lighting, extending over periods of from five to fifteen years. Contracts of this nature have a bearing upon the Governor's statement that within the last four years modern gas lamps have been installed in 50 miles of main roads in the Company's area. In the matter of public lighting contracts the Company suffered two losses in the past year, but, on the other hand, two of the new contracts embrace conversions from electricity. For some years the Company have had a system of block charges in force for industrial and other large-scale consumers, and now a two-part tariff has been introduced as an alternative charge available to all domestic consumers, ordinary or prepayment. This new tariff was in operation only during the final quarter of the year, but the Company have every reason to be hopeful of its success. We hope, also, that success will attend the Company's forthcoming effort in Parliament to make easily practicable in every case the exercise by council house tenants of the right of choice already conferred upon them as to whether they will use gas or electricity, or both, in their homes.

More Fair Play

WE have called attention in these columns to the situation which has arisen at York and Guildford in regard to the supply of gas to Council house tenants; and in view of Parliament's intervention in 1934 in an attempt to secure fair play for gas the situation is more than astonishing. The position at York is that the Corporation refused the Gas Company permission to carcass, free of cost to the Corporation, Council houses during the

course of their erection—and this in spite of the expressed desire of the tenants to use gas. At Guildford, where the Corporation are also electricity undertakers, a scheme for an all-electric estate was submitted to the Council. No opportunity whatever had been given to the Gas Company to tender for any work in connection with the houses, and a resolution that such an opportunity should be given to the Company was defeated. In both instances the gas undertakings are among the largest ratepayers and employers of labour in the districts. It has been necessary for the York Gas Company to promote a Bill in Parliament in order to obtain justice, and a Bill on the same terms has been promoted by the Gas Light and Coke Company.

The latest case is that of Manchester, where both gas and electricity are under municipal control. Last week the Manchester City Council approved of the proposal of the Housing Committee to provide only electricity in municipal flats to be built in connection with a clearance scheme. Councillor Jackson, Chairman of the Gas Committee, asked that the matter be sent back, so that the tenants could have a free choice of either gas or electricity, but on a vote his amendment was lost. Alderman Walker, a former Lord Mayor of the City, declared that nothing could stop electricity advancing, and spoke of the " products of combustion which are poisonous "—the old gag. We agree that electricity will advance if gas is to be thrust out of the picture in this astonishing manner. The Manchester Corporation has in effect decided that the ratepayer shall not have freedom of choice in the supply of gas and electricity, while Parliament has decided that the tenant shall enjoy this freedom. It is all very perplexing, and the sooner the matter is cleared up in law, the better.

Rural Electricity

THE " JOURNAL " for Jan. 22 last contained a report of the Board of Trade Enquiry into an application by the Winsford Urban District Council for an extension of limits of gas supply. The Mid-Cheshire Electricity Supply Company opposed extension into Rural Parishes on the grounds that a supply of gas would cut into their business where they were already established, and consequently reduce their profit. In short, they asked for protection against competition. The decision of the Board in this case will be awaited with the keenest interest, because it is obvious that if it is seen fit to recognize the claim of the electricity suppliers to the extent of refusing extensions to the gas area, then an entirely new political question will be raised. If this opposition is successful, it would appear that in the future every interested gas undertaking should oppose every proposed extension of an electricity undertaking.

Of late *The Times* has devoted much valuable space to discussion of electrical problems and progress. We commented on one article, dealing with electricity in Oxford Colleges, in our issue for Nov. 13 last. That article occupied a prominent position on the leader page of *The Times*, and an article dealing with electricity in rural areas occupied a similarly prominent position in the issue of *The Times* for Feb. 6. The latter article, with a sub-title " The Drawbacks to Supply," advances reasons for the very slow progress of rural electrification. The fundamental reason is that in rural areas distribution represents over 60% of the total cost of electricity to the consumer, and the rates which the suppliers fix for current are too high for the would-be consumer. To overcome this distressing difficulty the author of *The Times* article makes a remarkable suggestion. Both county and rural authorities, he points out, can levy a rate for the purpose of bringing a water supply or drainage to an area; they cannot at present, without special powers, levy a rate to bring electricity to an area. " In many villages wanting electricity," he observes, " the immediate possibilities of a paying load are insufficient to meet the cost. But the effect in most instances of bringing electricity to a village is that value of property increases if actual building does not at once take place. The cost on the rates would soon therefore be made up if a rate were levied for electric extension." This is indeed a strange argument. Water is not exactly in competition; nor has drainage any competitor. On the other hand, electricity has competitors in oil, coal, coke, and gas. It is just as tenable to argue that a rate should be levied for the extension of gas mains, or to offset part of the transport costs for coke, coal, or oil.

Good Advertising

DESCRIBING the present vogue of the neon system of illumination, the London Correspondent of a New Zealand paper says that " retailers vie with one another to attract the public eye after dark. Theatres must spend a fabulous sum in advertising plays on the front of their buildings." In the main thoroughfares of the West-End there is " a luminous flood of red, blue, and green. With so many signs, it is questionable whether one notices any particular one, but at least they brighten life." That these advertising signs, moving and otherwise, do brighten life, there can be no doubt, but is it altogether reasonable to question whether, with so many of them, one notices any particular one? With competition so keen, it may well be that some of the signs escape attention, but they will be the ones which lack character and individuality, and so make no particular appeal.

The correspondent in question was referring to illuminated signs, but the same arguments might be applied to other forms of publicity, and therefore what he says is worthy of consideration outside the limits of the neon system. Through every medium of publicity there are many calling attention to their wares, but this does not mean that well-devised advertisements fail to attract; on the contrary, the very number of announcements has tended to make the community publicity-minded, so that the need for advertising becomes ever more insistent, rather than less. But there is a need which prevailing conditions make increasingly insistent—namely, that the advertising should be good. It is not a case where " just anything " will do. The bigger the " crowd," the greater is the need to cultivate individuality; that which is outstanding will still attract. Never before has it been so necessary as it is to-day to take care that advertising is of the best.

He would be an unobservant person indeed who came away from (say) Piccadilly at night-time without having some of the illuminated signs imprinted upon his memory, and the same reasoning applies to other forms of advertising. Worthwhile publicity makes its call upon both purse and pains.

That good advertising is necessary must, in fact, be evident to all who believe in the level-headedness of our captains of industry; for big businesses continue to spend huge sums on publicity. This publicity, of course, takes various forms, but advertising through the medium of the Press must remain the most important. We have of late been exhorted in the pages of our newspapers to believe that " Beer is Best," and now comes a statement by the Publicity Manager of Messrs. J. Lyons & Co., that " you will find in the co-operative beer campaign one of the most remarkable proofs of the value of advertising." Results from advertising may occasionally seem slow in arriving, but if the proposition is right the pulling power is there all the time.

Public Lighting

RECENTLY we were able to record that, in spite of keen electrical competition, the Ilfracombe Gas Company had again secured the public lighting contract for Ilfracombe and district. The Town Council accepted the Company's tender for a ten-year contract, and instructed the Company to carry out at once a scheme, recommended in the tender, of modernization and improvement of all lamps in the principal thoroughfares of the town. As a contribution to the Jubilee Celebrations at Ilfracombe, the Gas Company converted seven of the then existing lamps in the main street of the town to the specification now agreed to by the Council, and there can be little doubt that the satisfaction which this example of modern gas lighting gave was largely instrumental in the gaining of the contract.

Such demonstration of what is implied by modern gas lighting is convincing to the unprejudiced, but an efficient and economical gas lighting installation in, say, Class A of the Standard Specification would have no appeal to Councillor Constantine, of Accrington, who (according to our local correspondent) stoutly declared at a meeting of the Town Council that gas was a thing of the past, and they should submit to it. He was horrified that certain streets in Accrington had been allocated to the Accrington District Gas Board to enable demonstrations to be made of modern gas lighting. Such a step, he maintained, was regrettable, unfair—a wrong policy which undermined the working of Committees. We cannot understand the meaning of this undermining process, but we can see that Councillor Constantine is not exactly a gas enthusiast. It is to be hoped that there are other members of the Accrington Town Council who will assess lighting installations, as such, on their merits, irrespective of the source of energy which produces the light.

Personal

Mr. J. POWDRILL, Technical Assistant to Accrington District Gas Board, has been appointed Engineer and Manager to Rawmarsh District Council Gas Department. On the staff of Accrington Board 11 years, entering their service as Junior Chemist, Mr. Powdrill has had considerable experience during that time of reconstruction work. In 1929 he was elected a Fellow of the Chemical Society.

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At a recent meeting of the Council of the Western Junior Gas Association it was unanimously agreed to invite Mr. R. J. H. CLARK (Engineer to the Plymouth and Stonehouse Gas Light and Coke Company) to become an Hon. Member of this Association, which he has accepted.

Mr. Clark was one of the original Juniors when the Association was formed in 1926, and since he became Engineer at Plymouth he has continued to take an active interest in the affairs of the Western Junior Association by arranging visits to his works and also giving facilities for his staff to attend meetings and read Papers.

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Mr. DONALD BELL, of the Knottingley Gas Company, has been appointed Gas Sales Representative to the Nuneaton Gas Company and took up his duties there on Feb. 3.

Obituary

H. Townsend, M.Inst.C.E.

As we go to Press we learn with regret of the death—peacefully, after a short illness—of Mr. Harry Townsend at the age of 83.

Mr. H. Townsend was the father of Mr. W. W. Townsend, who is, of course, the Engineer and General Manager of the Colchester Gas Company, and at the time of his retirement thirteen years ago he was in charge of the Wakefield Gaslight Company, of which he became Engineer and Manager in 1895 and Managing Director in 1913. In May, 1916, Mr. H. Townsend was the recipient of a presentation from the staff on the completion of twenty-one years with the Undertaking. Prior to his appointment at Wakefield, he was Engineer and Manager of the then Plymouth Gas Company, a position he occupied for five years, before which he was for some six years at Dewsbury, and before that again at the Thornton Road Gas-Works of the Bradford Corporation. He retired at the age of 70, living for some while at Eastbourne and then at Cliftonville, where he died.

One of the oldest members of The Institution of Gas Engineers, Mr. Townsend was elected as long ago as 1876, and among his proudest possessions was the Institution Gold Medal, which he was awarded in 1913, under the Presidency of Sir Corbet Woodall, for his Paper entitled "The Incidence of the Day Load Factor." His three sons were all trained as Gas Engineers; when Mr. W. W. Townsend left Hereford in 1913 his brother Charles succeeded him there, while Harry took his place as Assistant Manager at Wakefield. Soon after the war broke out both Charles and Harry joined up, the former being killed at Ypres in March, 1916, while the latter was posted "missing" in the battle of the Somme in June of the same year. Their mother, prostrated with grief, passed away in the following January.

The sympathy of his many friends in the Gas Industry will be extended to Mr. W. W. Townsend in his sad bereavement.

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In the "JOURNAL" for Jan. 29, we announced the death of Mr. WILLIAM HILL, who gave 50 years' service to the Gas Industry, being Engineer and Manager of the Stalybridge Corporation Gas Department for 31 years. He was from 1911-34 Auditor to the then Manchester District Institution of Gas Engineers.

Owing to indisposition, Col. W. M. Carr, O.B.E., T.D., the President of The Institution of Gas Engineers was unable to attend the funeral. The Gas Industry, however, was well represented, and among those present were Mr. A. L. Holton, Senior Vice-President of the Manchester Association of Gas Engineers, Mr. J. Bridge, Honorary Secretary of the same Association, and Messrs. F. Elliott, B. Goddard, H. C. Handley, G. Lindley, and J. Townsley.

The Stalybridge Corporation Gas Department was represented by Mr. R. J. Restall, and six of the oldest employees acted as bearers.

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The death is announced of Mr. HENRY CHAPMAN, J.P., who was a Director of the South Shields Gas Company for 34 years and Deputy-Chairman for 6 years. As recently as Jan. 29 he presided over a Meeting of the Directors of the Company when he was apparently in normal health. His many activities in South Shields and District have left behind the impress of useful and devoted service.

Forthcoming Engagements

Feb.

14.—LONDON AND SOUTHERN JUNIOR ASSOCIATION.—Meeting. Paper by Dr. F. J. Dent.

15.—SCOTTISH WESTERN JUNIOR ASSOCIATION.—Annual Social.

15.—SCOTTISH EASTERN JUNIOR ASSOCIATION.—Meeting at Perth.

15.—YORKSHIRE JUNIOR ASSOCIATION.—Short Paper Meeting at Bradford.

19.—B.C.G.A.—Executive Committee Meeting, 11.30 a.m.

20.—B.C.G.A.—Northern District Conference at Middlesbrough.

20.—JOINT JUNIOR ASSOCIATIONS.—Visit to B.I.F., Birmingham.

21.—B.I.F.—Joint Visit of Gas Salesmen.

22.—SCOTTISH WESTERN JUNIOR ASSOCIATION.—Meeting at Kingshill Colliery.

22.—WESTERN JUNIOR ASSOCIATION.—Meeting at Yeovil. Paper by Mr. T. W. Clapham.

26.—S.B.G.I.—Council Meeting at the B.I.F., Birmingham, 3 p.m.

25-27.—JOINT GAS CONFERENCE.—B.I.F., Birmingham.

Mar.

4.—MANCHESTER AND YORKSHIRE JOINT JUNIOR ASSOCIATIONS.—Visit to Leyland. Paper by Mr. R. L. Greaves.

5.—B.C.G.A.—South Wales District Conference at Cardiff.

News in Brief

The Price of Gas has been reduced by the Enniskillen Gas Company from 8s. to 7s. 6d. per 1,000 cu.ft.

Applications are Invited for the position of Manager of a Gas-Works in a growing area of Lancashire at a commencing salary of £450 per annum.

The Profit on the Malvern Gas Department for the half-year ended September last was £626, as against £104 during the same period the previous year.

A Second Assistant Engineer is required by the Borough of Burnley Gas Department at a salary in accordance with the Corporation's Grading Scheme.

Mr. C. H. Bamber, Engineer and Manager of the Rochdale Corporation Gas Department, gave a talk on the Gas Industry to the Rochdale Round Table on Feb. 5.

An Attractive Stand was organized at the Ramsey Trades Exhibition last week by the Ramsey Gas Company, who displayed a comprehensive range of gas appliances for lighting, heating, and cooking.

Contributions Totalling £22,000 have been passed on by the Belfast Gas Department to the sinking fund and interest charges on the debt on the City Hall and to the relief of rates in the current year.

If Gas Cookers are Desired by tenants who have changed to electricity from gas, the Dumfries Town Council has decided that the cost of reinstating the gas appliances must be borne by the Electricity Department.

An Increased Final Dividend on the ordinary stock of the Watford and St. Albans Gas Company of £3 12s. 6d.%, against £3 7s. 6d.%, making the dividend for the year £7%, against £6 15s.% last year, has been declared by the Directors of the Company.

Dividends in respect of the half-year ended Dec. 31, 1935, have been recommended by the Directors of the Tottenham and District Gas Company at the rate of 5½% and 5% per annum respectively on the preference stocks and £6 15s.% per annum on the ordinary stock, all less income-tax.

Mr. S. Tagg, Engineer and Manager of Preston Gas Company, addressed the Preston Rotary Club, on Jan. 30, on "Coal." In his opinion the settlement of the dispute reflected a spirit of compromise and commonsense on the part of the producer and the user. At Preston Works 1,500 tons of coal were used weekly. The coal had to be handled in the ordinary working week of 47 hours.

Efficient Use of Coal.—In an Address last week to the Rotary Club of Manchester, Sir Percy Alden, Chairman of the British Institute of Social Service, said that the best instance of the efficient use of coal was provided by the Gas Industry. Those who "ran down" gas were absolutely foolish, he remarked, and gas was going to do more than anything else to clear the atmosphere.

Gas Accounts for 100 out of 101·5 Miles of lighted streets at Middlesbrough, the remaining 1·5 miles being lighted by electricity. The town has a population of 139,500 whose lighting requirements are met by 2,958 gas and 40 electric lamps. During the year 1934-35, 68,885,191 cu.ft. of gas was consumed for public lighting at a price of 1s. 9d. per 1,000 cu.ft., the total expenditure for the year on street lighting being £11,173.

Exactly 100 Years Ago on Jan. 28 Evesham was illuminated for the first time by gas. It is recorded in Bengeworth Church that John Gibbs was the first to introduce gas to the Borough. The Town Council acquired the undertaking in 1878, and at a meeting of the Town Council last week Councillor F. T. Willmott, Chairman of the Gas Committee, spoke of the increased revenue from the sale of gas and an increase in profit for the half-year ended September last year of more than £500.

A Programme of Reconstruction and Renewal is being expedited by Mr. J. D. Smith, Engineer, Manager, and Secretary, Belfast Gas Department. It had been his intention to recommend that two of the water gas plants be reconstructed and modernized, the work of reconstruction on one plant to be carried out during the summer of 1937 and on the other during the summer of 1938. In view, however, of the increased demand for gas he will proceed with the reconstruction of one plant during the forthcoming summer. Messrs. Humphreys & Glasgow, Ltd., have been asked to submit tenders for the work. The reconstruction of the two sets of plant will increase the manufacturing capacity by almost 2½ million cu.ft. per day and result in very substantial savings in working costs.

The Streets Remained Bright at Slough, Bucks., during an electrical failure on Sunday night which plunged the greater part of the town into darkness from 8.35 until 10 o'clock, because gas is responsible for their illumination.

A Further Reduction in the price of gas is announced by the Kennoway and Largo Gas Company. The price has been lowered by another 3d. per 1,000 cu.ft. to all consumers, including those under the optional two-part tariff, as from the meter readings for the quarter ended Dec. 31 last.

A Change to Gas from Electricity was intimated in a communication from the District Gas Company read at a meeting of Prestonpans Town Council. This stated that a number of tenants of municipal houses had asked the Company to install gas brackets in their houses at the tenants' expense. The Company asked permission for this to be done. The Council have no objection to the tenants changing from electricity to gas, but decided that individual application for this should be made to the Town Council.

Bituminous Road Mixtures are the subject of a recently published British Standard Methods for the Sampling and Examination of Bituminous Road Mixtures. These methods have been drawn up to provide a standard procedure for the examination of bituminous mixtures (asphalt and tarmacadam) used for road surfacing. Copies of this British Standard (No. 598, 1936) may be obtained from the Publications Department, British Standards Institution, 28, Victoria Street, London, S.W. 1, price 3s. 8d. post free.

"**The Design of Appliances** for the domestic use of gas has made noticeable advances in the last year or two," states the annual report of the Engineering and Metal Section of the Manchester Chamber of Commerce. "Gas continues to extend its application in the immense field of industrial heating. The Gas Industry is turning its attention very seriously to the devising of attractive promotional tariffs, by means of which . . . particularly by domestic consumers, is charged at reduced rates, have proved effective in several instances in increasing the sale of gas in proportions which more than compensate for the initial loss of revenue, and the policy is likely to be extended very widely. Future prospects are considered to be brighter than they have been for some years."

Gas Suffered a Two-Vote Defeat when by 50 votes to 48 the Manchester City Council decided at its last meeting that the Corporation flats in Collyhurst No. 2 and West Gorton No. 2 schemes should be all-electric with no gas installation whatsoever. The Chairman of the Housing Committee, Alderman Miles Mitchell, stated that as electricity was being installed for lighting and as the flats had coal ranges it was only a question of whether the cookers and heaters should be electric or gas. Councillor Hallows said that tenants in the all-electric flats at Smedley Point had complained bitterly because they had not been given the alternative use of gas or electricity. Councillor Jackson, Chairman of the Gas Committee, moved an amendment instructing the Housing Committee to install both gas and electricity in the flats, but this was defeated by two votes.

Correspondence

Drohan Fund

SIR,—We are sure you will be glad to hear that so far we have received on behalf of the above fund £252 6s. in sums ranging from 2s. to one cheque for £50. Mrs. Drohan and family are very grateful for the kindness shown by members of our profession in their welfare. The fund is not yet closed, and we hope still further subscriptions may come in to enable Mrs. Drohan to make a new start in life.

Yours, &c.,

IRISH ASSOCIATION OF GAS MANAGERS.
P. J. McEVOY, President.
G. AIRTH, Hon. Secretary.

Gas-Works,
Dundalk.
Feb. 6, 1936.

A Fine Piece of Publicity

Gas Light and Coke Company's Striking Advertisement

Many of our readers will probably have seen, and favourably commented upon, the excellent advertisement of the Gas Light and Coke Company which we reproduce below.

Occupying prominent positions in all the London morning and evening newspapers, and the principal provincial journals as well, this display must have done much to counteract any impression that gas is a back number. The striking caption must have attracted the attention of millions of people throughout the length and breadth of the land, who doubtless went on to read the points from Sir David Milne-Watson's speech which so ably set out some of the many directions in which gas progress has been made in London during the past year. The figures quoted speak for themselves—and the Industry could well do with more publicity work of this character.

LONDON'S NEW GAS RECORDS

Over 500 Million Cubic Feet increase

603,000 NEW APPLIANCES

SIR DAVID MILNE-WATSON, Governor of the Gas Light and Coke Company, speaking yesterday in London, said 'We have never enjoyed a more encouraging year, nor one more indicative of the great and progressive nature of our business.'

Points from Sir David's speech were:

★ **Gas sales in 1935 rose by 515 million cubic feet over 1934. This equals 75 million electrical units—a total reached by few suppliers of electricity in the London area for their whole annual output—not merely their increase.**

★ **This is all the more impressive when we consider that the new gas appliances, which are displacing older models at an unprecedented rate, use much less gas.**

★ **We installed new gas appliances at the rate of more than one a minute throughout the whole of 1935 . . . including 364,289 cookers, 151,137 fires, and 66,078 water heaters.**

★ **Refrigeration is in its infancy in this country and yet we sold more than 9,000 Electrolux gas refrigerators in our first campaign to make them popular. We believe that no other effort to sell refrigerators of any kind in this country can challenge such a record.**

★ **Coke is becoming more and more popular as a smokeless, labour-saving fuel for open fires, for hot water and central heating. Coke sales for 1935 reached a record figure.**

★ **Modern gas lamps have been put up along 50 miles of main road in and around London in the last four years. Sixteen new contracts for gas street lighting were obtained in 1935.**

★ **Over 19,000 factories now use gas for industrial processes in our area — more than ever before.**

★ **Such a turnover of business has put a great strain on all departments . . . we have been working at high pressure throughout the year. Over three times as many men passed through our courses of technical training.**

★ **Many thousands of the Company's customers can benefit by the new Two-Part Tariff by which they pay a standing charge and then only half price for their gas.**

★ **. . . 37,342 more customers in 1935 . . .**

THE GAS LIGHT AND COKE COMPANY

— never lets London down

British Gas Federation

Meeting of the Council

Appointment of Chairman.—On the motion of Mr. D. M. Henshaw, seconded by Mr. R. W. Edwards, Sir David Milne-Watson was unanimously elected Chairman of the Council for the ensuing year.

Appointment of Joint Secretaries.—Mr. W. J. Smith and Mr. J. R. W. Alexander were appointed Joint Secretaries of the Federation.

British Industries Fair, Birmingham.—The arrangements which had been made to hold a Gas Conference at Castle Bromwich from Feb. 25-27 inclusive were reported, and it was stated that the members of the National Joint Industrial Council for the Gas Industry were being invited to attend the Exhibition and the luncheon on Tuesday, Feb. 25, and to inspect the work which was being done in connection with gas for industrial purposes.

Women Demonstrators.—Discussion took place with regard to the necessity for extended training facilities for women demonstrators, and the steps which had been taken to emphasize the importance to gas undertakings of the employment of demonstrators were reported and approved.

The Institution of Gas Engineers

Dates of Examinations

The Examinations of The Institution of Gas Engineers in Gas Engineering will be held on April 25 and in Gas Supply on May 2. The Oral Examinations will be held in London on June 24.

Application.—Forms of Application for External Candidates can be obtained from the Secretary of the Institution and have to be returned to him not later than Feb. 28.

Charles Hunt Memorial Medals.—Candidates for the Diploma Examinations in Gas Engineering (Manufacture) and Gas Engineering (Supply) are eligible for the award of the Charles Hunt Memorial Medals.

Education Calendar, 1936.

The following dates are of special interest to Examination Candidates, who are reminded that the Gas Education Committee now meets on the third Tuesday in every month to consider applications from students received during the preceding calendar month:

FEB. 28.

Last date for receipt of applications to sit for Diploma Examinations and Ordinary and Higher Grade Examinations in Gas Engineering and Gas Supply.

APRIL 2.

Last date for receipt of Diploma Theses

APRIL 25.

Examinations in Gas Engineering—
Ordinary Grade, 2–5 p.m.
Higher Grade—Part I., 2–5 p.m.
Part II., 6–9 p.m.
Diploma Grade—Part I., 2–5 p.m.
Part II., 6–9 p.m.

MAY 2.

Examinations in Gas Supply—
Ordinary Grade, 2–5 p.m.
Higher Grade—Part I., 2–5 p.m.
Part II., 6–9 p.m.
Diploma Grade—Part I,, 2–5 p.m.
Part II., 6 9 p.m.

MAY 29.

Last date for receipt of Examination Results in Ancillary Subjects.

JUNE 24.

Oral Examination in London.

JULY 22.

Publication of Examination Results, prior to which information as to individual results will not be available.

Gas and Electricity for Heat Production

Members of The Institution of Gas Engineers are invited to attend a Meeting of the Institution of Civil Engineers on Tuesday, Feb. 18, when a Paper on "A General Comparison of Gas and Electricity for Heat-Production" by Mr. A. H. Barker will be presented.

Proofs of the Paper may be obtained, upon application, from the Secretary of The Institution of Gas Engineers.

Amalgamation and Grouping

British Gas Light and Huntingdon.

The Huntingdon and Godmanchester Gas and Coke Company, Ltd., has been sold to the British Gas Light Company, Ltd. Last December the vendor Company was offered £16 for every £10 share, and the offer has now been accepted.

Officials of the new owners are already superintending production at Huntingdon, but the complete assumption of control will not be effective until next month.

Kirkcaldy and Dysart.

Kirkcaldy Gas Committee is recommending the Town Council to instruct the Town Clerk to offer £14,225 to the Directors of Dysart Gas Light Company for the purchase of their undertaking. The Directors have intimated that they are prepared to recommend shareholders to accept this offer.

Centenary of the Philadelphia Gas-Works Company

Messages from Institution of Gas Engineers

The Philadelphia Gas-Works Company celebrated its Centenary on Feb. 10, and the following messages have been sent by The Institution of Gas Engineers to Mr. Conrad N. Lauer, the President of the Company, and read at the Banquet in Philadelphia:

From Colonel W. MONCRIEFF CARR:

The Council and members of The Institution of Gas Engineers and I congratulate the Philadelphia Gas-Works Company on the attainment of its Centenary and send good wishes for the continued prosperity of our American colleagues and their great Undertaking, my visit to which in 1933 *I recall with pleasure.*

PRESIDENT CARR.

From Mr. FRANK P. TARRATT:

As leader of Delegation of Members of The British Institution of Gas Engineers which visited Philadelphia in September, 1933, *I send you our cordial greetings and kind remembrances on the occasion of the Centenary of the Philadelphia Gas-Works Company. We will drink to your Health at twenty-one hours on the tenth.*

PAST-PRESIDENT TARRATT.

From Mr. J. R. W. ALEXANDER:

Please convey to all those who made memorable our 1933 *visit to Philadelphia every good wish for the success of your celebration of the Centenary of the Philadelphia Gas-Works. At your Bicentenary I hope to send you similar greetings. Kind regards to all our friends of the American Gas Association.*

SECRETARY ALEXANDER.

The Women's Gas Council

Formation of Downham Branch.

The inaugural meeting of the Downham Branch of the Women's Gas Council was held on Jan. 30 at the Showrooms of the South Metropolitan Gas Company, 431, Bromley Road. Miss K. M. Halpin (Organizing Secretary of the Council) addressed a gathering of nearly a hundred in the Showroom's spacious demonstration room.

In the absence of Mrs. A. L'Epine Smith, Lady Superintendent of the South Metropolitan Gas Company, the chair was taken by Miss Mackenzie.

In her address, Miss Halpin quoted the findings of investigators at a recent scientific home management exhibition. "The important question of what the housewife would do with her increased leisure reveals many possibilities," said Miss Halpin. "Her experience and practical knowledge qualify her to take part in solving present-day social problems, and she should be urged to take a greater interest in civic and national affairs and to accept responsibility in the work of a world which badly needs her assistance."

The following Committee were appointed to organize the new Branch: Miss Smith (Secretary), Mrs. Goodenough, Mrs. Kirby, Mrs. Kent, Mrs. Blackburn, Mrs. Oldman, and the local demonstrator of the South Metropolitan Gas Company.

Wimbledon.

In view of the popularity of the Home Service Associations already started at Worcester Park, Sutton, Epsom, and Kingston, the Wandsworth and District Gas Company have now decided to form a Branch in the district of Wimbledon.

Miss Halpin to Address London Club.

Miss Halpin will speak at the Greater London Soroptimist Club Luncheon to be held at the Hotel Washington, Curzon Street, W. 1, on Thursday, Feb. 13.

Splendid Work at Edinburgh

Large Gas Consumption Increases

It was reported by Mr. J. Jamieson, Engineer and Manager of Edinburgh Corporation Gas Department, at a meeting held on Jan. 31, that the consumption of gas from Nov. 16 to Dec. 15 was 398,333,000 cu.ft. as against 370,018,000 cu.ft. for the same month of 1934, an increase of 7·65%. From May 16 to Nov. 15, 1935, the total gas used was 2,068,516,000 cu.ft., as against 1,992,043,000 cu.ft. for the same period the previous year, an increase of 3·84%. These increases were the more remarkable since the figures quoted for 1934 were 5·33% and 2·60% respectively higher than those of 1933.

These large increases were due to the growing popularity of gas for cooking, heating, and lighting, and it was pointed out that during the month 1,307 cooking appliances were supplied and fitted by the Department, approximately 50 per working day; 624 fires were supplied, and 296 miscellaneous appliances, consisting of radiators, water heaters, and other domestic apparatus, making a total number of appliances for the month of 2,227. The most encouraging feature was the growing popularity of gas for heating, as indicated by the exceptional demand for gas fires during the past month. Gas consumers were evidently taking advantage of the very low costs at which gas was now supplied under the block rate method of charge, where a substantial reduction in price results after the small consumption of 5,000 cu.ft.

Cheaper Gas.

We learn from a local correspondent that another impending reduction in the price of gas in Edinburgh was announced on Friday last. The policy of the Gas Sub-Committee for some time past has been to bring the charges for gas through prepayment meters more into line with the charges for gas through ordinary meters, and they consider the present time is opportune for carrying that policy into effect, in view of price adjustment which may be necessary in the next financial year as a result of the increase of one shilling per ton in the price of coal.

The Sub-Committee recommend, therefore, that the first 5,000 cu.ft. of gas used in any one quarter through prepayment meters should be reduced in price from 3s. 1·62d. to 2s. 10½d. per 1,000 cu.ft., a reduction of just over 3d. per 1,000 cu.ft. Amounts in excess of 5,000 cu.ft. will continue to be charged at 2s. 3½d. per 1,000 cu.ft. The reduction is to take effect on all meter readings subsequent to Feb. 15, and is estimated to cost the Gas Undertaking about £3,000 in the current financial year to May 28 next. Meter settings will not be altered, but the rebate on a consumption of 5,000 cu.ft. will be 6s. 5d. instead of 5s. 2d. at present.

Scottish Junior Gas Association (Western District)

Visit to Stewarts & Lloyds' Tube Works

On Wednesday, Jan. 22, nearly forty members of the Scottish Junior Gas Association (Western District) visited the Phœnix Tube Works of Messrs. Stewarts & Lloyds, Ltd., at Rutherglen. The members were welcomed by Mr. Whamond, the Works Manager.

An interesting 2½ hours was spent witnessing the manufacture of lap welded, butt welded tubes, tees, bends, &c., and at the conclusion of the tour, Mr. A. Bujnowski (the President), on behalf of the Association, expressed thanks for the opportunity which Stewarts & Lloyds had given them to see the works. It had been a most instructive and interesting visit and one which he felt sure was enjoyed by all the members.

Mr. Whamond suitably replied,

Long Service Cast-Iron Pipes

A Fascinating Retrospect

The history of the Gas Industry seems very short indeed when compared with that of the cast-iron pipe. There function this day pipes of this material laid during the reign of King Louis XIV of France which continue to give trouble-free service after some 270 odd years!

This very interesting fact is one of a veritable legion of similar cases where cast-iron pipes have satisfactorily provided unfailing water, gas, and sewage services which has been collected and admirably edited by the Stanton Ironworks Company, Ltd., of Stanton, Nottingham, to form the text of "Cast Iron Pipe: Its Life and Service."

Let it be understood that this book is no mere publicity "stunt" in the accepted sense of the phrase; no invidious comparisons are drawn as to the relative merits of various makes of cast-iron pipes nor, indeed, with any other material. Neither do the Stanton Ironworks as publishers of this work take more than their rightful share of the credit of evolving a greatly improved cast-iron pipe. If anything, they have erred on the side of modesty.

Paramount to-day are the vexed problems of corrosion and electrolytic action. Centuries have proved the resistance cast-iron offers to these destructive agents. Whatever "pros" or "cons" may be advanced by the distribution engineer in the choice of material for gas mains the evidence in support of cast-iron provided by this book must be admitted as proof of its long serviceable life.

The introduction to the work points out that the information contained in its pages comprises a selection only from a mass of data supplied by gas and water engineers in all parts of the United Kingdom. Sections also deal with American and French cast-iron mains. Other chapters deal with landmarks in the history of water supply; early uses of iron; the development of the cast-iron pipe; and cast-iron water and gas mains in Great Britain, France, and the United States. As far as we are competent to judge there is one small geographical inaccuracy in the first chapter where mention is made of Caerwent. If this is Venta Silurum of the Romans, then surely it is in Monmouthshire and not, as stated in the book, in Gloucestershire. That, however, is a rather small matter which in no way influences the authenticity of this very interesting book of 118 pages, the text of which is supplemented with twelve photographic plates.

Gas Fitter Electrocuted

Formed Earth by Holding Gas Pipe with Grips

An inquest was held at Hammersmith Coroner's Court, before Dr. Edwin Smith, on Monday, Feb. 3, on William Henry Reid (26), gas fitter, of 15, Oliphant Street, Queens Park, Paddington. A verdict was returned of accidental death while at work as the result of a defective electric lamp.

Mr. Potter represented the Gas Light and Coke Company; Mr. James McMillan the relatives of the deceased; and Mr. Thompson appeared on behalf of the Electricity Commissioners. After evidence of identification, Harold Charles Butler, gas fitter, working with the deceased, said they were doing repairs to the gas pipes to a flat at 14, Sidney Street, Chelsea, on Jan. 29 last. Read was screwing an elbow into a joint to rig up the pipe for the meter, and an electric table lamp was between them on the floor. Reid moved his foot and caught the flex on the lamp, and he put his left hand out to hold it. He had a pair of grips in his right hand over the gas pipe, and as he touched the lamp he rolled over. Witness immediately switched off the current and went for assistance, but Reid proved to be dead when admitted to St. Luke's Hospital. He saw oxygen applied at the hospital, but the ambulance men did not try artificial respiration.

Mr. Forbes Jackson, M.I.E.E., electrical engineer to the London County Council, said he had examined the table lamp, which was constructed entirely of metal. The flex was worn, so that there was danger of the standard becoming alive. If a person was standing on a wooden floor such a shock would be very slight, but contact with a gas pipe or any metal connected with an earth might cause a fatality. He found the standard became alive when he pulled the flex, as bare wires then came into contact with it. There was no leakage from the electric installation to the gas piping, but the defective lamp standard was sufficient to cause the fatality.

In answer to Mr. McMillan, the witness agreed that had the standard been wired properly the accident would not have occurred.

Frederick Charles Smith, Research Chemist to the Gas Light and Coke Company, said he had examined the lamp standard and found the wiring defective, inasmuch as it had been bared too much when connected. Assuming Reid was making contact with a gas pipe, a dangerous state of affairs would be set up. It appeared to have been an amateur's job, but if it had been wired by a trade electrician, it was gross negligence. In his opinion, although there was little to go upon, he thought the flex had been put in recently.

Dr. William Leslie, Medical Officer of St. Luke's Hospital, said that death was very rapid, and was due to acute heart failure following electric shock. There was slight charring and blistering on the right hand and an abrasion on the other hand.

Summing up, the Coroner said the tenant probably bought the lamp second-hand in its defective condition. He returned a verdict, as stated, and extended his sympathy to the relatives of the deceased. Mr. Potter also extended the sympathies of the Directors of the Gas Light and Coke Company, and on behalf of the relatives Mr. McMillan thanked the Coroner and the Directors.

Gas Equipment for Child Welfare Centre

Noteworthy Installation by Newcastle Company

Gas plays an important part in the heating of the new Maternity and Child Welfare Centre which was opened for the Urban District Council of Newburn on Feb. 1 by the Rt. Hon. Sir Charles Trevelyan, Bart., Lord Lieutenant of the County of Northumberland.

It is no small tribute to the high regard in which gas is held that it should be chosen for this work, and the Newcastle-upon-Tyne and Gateshead Gas Company are to be congratulated upon securing so excellent an installation and for the efficient manner in which it has been carried out.

A thermostatically controlled gas boiler supplies six radiators for central heating, while for the provision of local warmth and the comfort of radiant heat in the dressing-room, doctor's and dentist's rooms, each has been fitted with a modern panel type gas fire mounted upon an artistic plaque of Napoleon and Ribbon Tarani marble. For the more continuous heating of the general room, toddler's room, and health visitors' room smokeless gas coke fires, with gas ignition, have been fitted in marble fireplaces. An all-enamelled gas cooker is installed in the kitchen.

The whole building, therefore, affords a typical example of the efforts which are being made towards the mitigation of the smoke evil.

Mathieson's Financial Publications

Mathieson's Financial Publications are as necessary to the financial world as the "JOURNAL" is to the Gas Industry. There is to be found in them information helpful to the investor and broker, arranged in just such form as to be most readily accessible. We do not know exactly how many of these publications there may be, but the number is over fifty, and from time to time more than one of them has been referred to in our pages. One which has been lately received is the January issue of "Monthly and Yearly Highest and Lowest Prices, with a Diary of Principal Events in 1935" (Fredc. C. Mathieson & Sons, 16, Copthall Avenue, London, E.C. 2; price 2s. 6d.). The principal events set out are, of course, those affecting Stock Exchange prices. Thus one is enabled, by glancing through the list, to realize the "cause," before turning to the highest and lowest prices in order to ascertain the "effect."

The figures relate to selected active securities, and range from Government stocks to a few well-known mines. The three big London Gas Companies are included, and the Imperial Continental Gas Association. Looking at the gas supply of the Metropolis, it is seen that in 1930 the lowest price at which business was done in Gas Light and Coke Company's units was 17s.; in South Metropolitan Gas Company stock, 97; and in Commercial Gas Company stock, 87. Last week's prices will be found on another page of this issue of the "JOURNAL," and, making any due allowance for "cheap money" influences, the contrasts shown must provide distasteful fare for people whose fingers itch to write the epitaph of the Gas Industry.

New Gas Showrooms at Middleton

An Impression of the New Premises.

Satisfactory Increase in Appliance Sales

Though the new showrooms of the Middleton Corporation Gas Department have only been open little over a month, we understand from Mr. H. D. Robinson, the Engineer and Manager, that the sales of gas appliances have been more than doubled during that period.

The opening of the new Showrooms and Offices in Long Street marks an important stage in the history of the Middleton Gas Department.

Competition and the lack of accommodation for storage and the display of appliances led the Gas Committee to seek new premises, and, after various sites had been considered, they decided to erect new showrooms and offices in the centre of the town's shopping area. Ample office accommodation is provided in the new premises, while there is also a small demonstration room. A special feature is the water heating display where various types of apparatus are demonstrated in use.

The site of the new premises has a frontage of 25 ft. 10½ in., and a depth from front to back of approximately 90 ft. The building is two storeys in height with basement for storage purposes, and the ground floor comprises a showroom, a demonstration room, a small office for payment of accounts, &c. The office accommodation on the first floor comprises Manager's office, drawing office, typists' offices, and general office, with small waiting room connecting all offices.

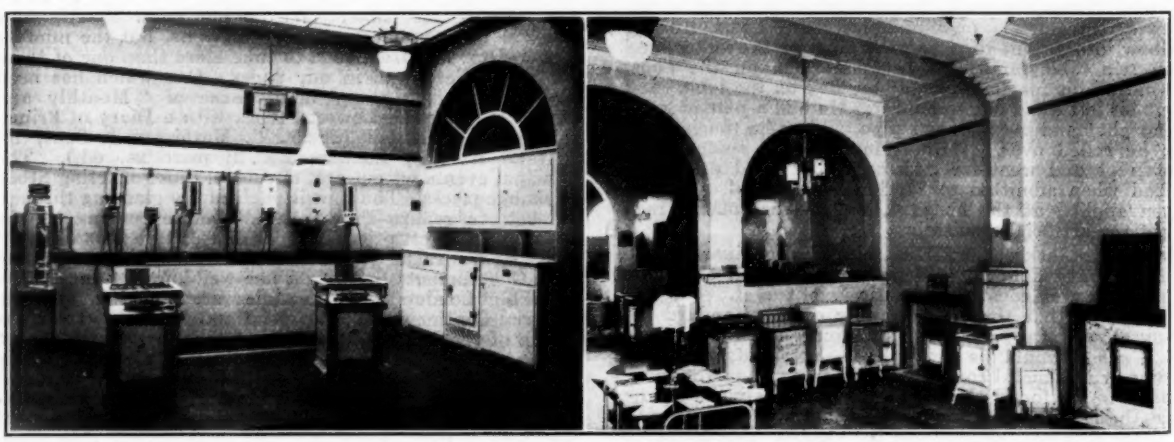
The premises are situated between fairly modern buildings which have been surfaced with white or cream terra-cotta, and it was felt that the new building would have to be designed to harmonize with these adjoining properties, and in consequence the front of the building is constructed in black and primrose vitrolite tiling, with moulded reconstructed stone surround, and pediment. The shop front is in " Staybrite " throughout, as also is the lettering to the fascia. Two ornamental gas lamps have been incorporated, and the large window on the first floor is also constructed of wood with " Staybrite " casing. The vitrolite tiling to the upper portion is jointed with horizontal " Staybrite " strips.

The building has a flat roof constructed in concrete and asphalt covered, to which access is provided from the inside of the building.

The interior of the building has been treated on modern lines, and the demonstration room is divided from the showroom by three arched openings. In the demonstration room a tiled demonstration platform has been provided with vitrolite wall tiling, cupboards, gas refrigerator, fittings, &c., and on the opposite wall a gas-fired coke burning fire with brick surround is provided.

The heating of the building is carried out with a low pressure hot water heating system fed from an " Ideal " gas boiler with thermostatic control. The hot water supply is by an " Ascot " multi-point heater, and the lighting of the premises is by Sugg's ventilating lamps.

The new premises were opened in December by His Worship the Mayor of Middleton (Councillor F. L. Kay, J.P.).



Two Views of the Attractive Interior of the Middleton Showrooms.

THE ACCOUNTS OF

The South Metropolitan Gas Company

The Report of the Directors records a decrease in sales of gas of 1·42% in the Company's area of supply. The accounts show that the sale to the South Suburban Gas Company in bulk was 1,615,983 therms against 1,438,921 therms last year. The net decrease is therefore 1·30%.

The number of consumers and appliances has increased, although the figures are not given, and the Directors state that the economy of the new appliances as well as more intensive competition plays a part in the reduced consumption per head.

It is mentioned that certain local authorities still are not inclined to give free choice of the form of light and heat to be used by their tenants, and the Company is following with sympathetic interest the Bill promoted by "its neighbour on the other side of the river." Vigilance will also be exercised in combating the "easy but unhygienic" fashion of flueless rooms.

There has been an increase in the mileage of high-pressure gas lighting, and the "Supervia" lamp has attracted widespread attention. The Directors, therefore, are disappointed at the loss of a very old contract from considerations other than intrinsic merit.

The Directors attach importance to their proposal in a Bill, to be submitted for the shareholders' approval, to legalize a meter to indicate consumption directly in therms. The Company has already introduced a gas unit of 4,000 B.Th.U. into its accounts.

Gas used for industrial purposes shows signs of increase. The return from coke remains satisfactory, and the demand for "Metro-Coalite" increases. The dividend proposed is again 5¾%.

The Co-Partnership Scheme is now in its 47th year, and the low figure of 2·35% is recorded as time lost through sickness by all weekly employees.

The capital account shows expenditure during 1935 on buildings, plant, and machinery £6,869 (against £24,349 in 1934), mains £28,643 (against £27,115), meters £7,754 (against £10,032), and stoves and fires £20,600 (against £3,138), making a total of £63,866 (against £64,634). No capital has been raised, and the balance unspent is now £238,415.

The following is a summary of the main items appearing in the revenue account:

Receipts.

—	1935.	1934.
	£	£
Gas (*less* public lighting expenses)	2,750,768	2,799,810
Rentals	429,691	424,179
Rents and transfer fees	6,432	6,075
	£3,186,891	£3,230,064

Expenditure.

—	1935.	1934.
	£	£
Coal (*less* residuals)	376,993	389,329
Wages (carbonizing)	171,134	187,592
Purification	55,100	54,038
Salaries of engineers, &c.	79,471	82,202
Repairs and maintenance of works and plant	444,302	482,614
Total net manufacture	£1,127,000	£1,195,775
Distribution	968,219	945,200
Co-partnership	50,324	50,324
Rent, rates, and taxes	136,843	128,907
Management	182,139	179,810
Miscellaneous, including superannuation fund (£62,218), Co-partnership insurance fund (£88,912)	175,734	184,052
Total expenditure (*less* residuals)	£2,640,259	£2,684,068
Balance to net revenue	546,632	545,996
Dividend and interest (net)	546,953	545,910
Leaving	£ 321*	£ 86†

* Deficit. † Surplus.

Receipts for gas are less by £49,042, partly on account of the reduced sale, but rentals are up by £5,512 on balance, meters realizing £4,072 more, stoves and fires £9,896 more, but fittings £8,456 less.

Expenditure was less by £43,809 after deducting residual receipts, chiefly owing to a saving in repairs and maintenance of works of £38,312.

Coal carbonized was 13,171 tons less at 1,105,402, the cash saving being £10,165. By-products receipts were more by £2,171 at £695,873, an increase in coke and breeze receipts being partly offset by a reduction in tar and ammonia products.

Residual Receipts.

—	1935.	1934.
	£	£
Coke	538,414	520,134
Breeze	10,313	8,163
Tar	138,405	153,724
Ammonia	8,740	11,680
Total	£695,872	£693,701

Coke made for sale was slightly less at 510,816 tons against 512,157, but the price received averaged 21s. 0·97d. against 20s. 3·74d. in 1934. Coke made for sale per ton of coal is more and the price received greater, reflecting perhaps greater sales of "Metro-Coalite," and the generally improved coke market.

Tar and ammonia reflect the results of severe competition, but only two years ago ammonia actually made a loss of £836, and tar is only £2,536 less than the 1933 figure.

Net coals are less by £12,336, wages by £16,458—a noteworthy figure—and repairs and maintenance of works by £38,312. The cost into gasholder is thus 3·29d. per therm, against 3·42d. in 1934, and 3·65d. in 1933.

Items under "Distribution" have increased except repairs and renewals of meters and fittings. Salaries are £5,758 more, mains £19,250 more, meters £10,301 less, stoves and fires £72,796 more, and fittings £64,484 less. The net increase is £23,019, due perhaps to the increased service to the consumer mentioned in the Directors' report.

Co-Partnership remains £50,324, the same dividend being proposed on the ordinary capital, so that under the basic price system the co-partners receive the same bonus.

Rents, rates, and taxes are more, and management is a little more, but miscellaneous charges are less, partly owing to a reduction in superannuation fund contribution from £72,291 to £62,218.

Balance to net revenue is more at £546,632, against £545,996, but net interest and dividend charges are higher at £546,953, against £545,910, so that there is a deficit of £321.

The year's working may be summarized by saying that once more lower income and higher distribution and "service to consumer" costs have been balanced by heavy savings on the gas-works.

Reserve and Special Purposes funds have not been drawn upon, and full interest has been credited to each.

The balance-sheet shows cash £95,887 and investments £404,215. Sundry creditors are £279,584, but accounts due to the Company amount to £638,053, and in addition £195,751 is due under hire-purchase agreements.

Following is the statement of gas made, sold, &c.:

—	1935.	1934.
	Therms.	Therms.
Quantity made and bought	83,189,366	84 191,674
Quantity charged	79,749,589	80,704,587
Correction for temperature and pressure	2,514,960	2 544,578
Total sold	82,264,549	83,249,165
Used on works	1,398,159	1,489,326
Quantity accounted for	83,662,708	84,738,491
Quantity not accounted for	473,342 (0·57%)	546,817 (0·64%)

It will be seen that both for 1934 and 1935 the unaccounted for gas is, on the usual basis of calculation, a

negative figure. More gas is accounted for than is recorded on the works meters.

The following principal working results and costs per therm show that technical efficiency and economy is well maintained:

	1935.		1934.
Coal cost per ton	19s. 4·55d.	..	19s. 4·00d.
Therms made per ton of coal carbonized	75·06	..	75·16
Coke made for sale per ton of coal carbonized, cwt.	9·24	..	9·16
Tar made per ton of coal carbonized, gallons	10·63	..	10·65

	s. d.		s. d.
Prices realized—			
Coke per ton	21 0·97	..	20 3·74
Tar per gallon	0 2·82	..	0 3·10
Liquor per butt	0 5·04	..	0 6·32
	Per Therm Sold. d.		Per Therm Sold. d
Expenditure (*less* residuals)	7·70	..	7·74
Gas rentals, &c.	9·29	..	9·31
Balance, being profit	1·59	..	1·57
Dividend and interest	1·59	..	1·57
Balance	..	..	..

THE ACCOUNTS OF

The Commercial Gas Company

There is probably no other gas company in the world with an area of supply comparable with that of the Commercial Gas Company, it being entirely built over and bounded on three sides by districts supplied by the Gas Light and Coke Company and on the remaining and south side by the River Thames. Except by demolitions and rebuilding, no opportunity exists for new business, and to these facts, coupled with the exceptionally intense competition throughout its whole area from municipally-owned electrical undertakings, can doubtless be attributed the decrease of a little over 2·93% in the sales of gas charged for the past year, equalling a loss in revenue from this source of £21,880. It is not surprising, therefore, that the Directors have recommended a reduction to 2½% in the final dividend, making 5% for the year, the basic dividend, against 5½% for 1934. This will absorb £88,750, and after providing for interest charges and stamp duty the balance carried forward is £6,767, against £11,074 brought in.

The Report states that since Midsummer last the method of charging for the additional cost of supplying gas to prepayment consumers has been varied, and instead of the former extra charge of 2d. per therm on the whole consumption, a charge is made of 3d. per therm, which ceases after the first 15 therms have been taken in each collection period. This appears to be a more equitable arrangement, as it enables the Company to recover some of the loss on the unprofitable consumer, who doubtless will always be with us, and at the same time acts as an incentive to the good consumer.

During the year the Company issued £145,000 3% debenture stock, which produced £124,405 (net), or an average of £85 15s. 10d. per £100 stock. Expenditure on capital account included freehold property £28,258, buildings and plant £4,719, and distribution items £30,178, less credits £2,495, leaving a net total of £60,660.

Comparison of the Revenue Accounts for the past Two Years

EXPENDITURE.

	1935.	1934.
	£	£
Manufacturing charges	376,030	393,892
Less residuals	174,444	184,342
Net manufacture	£201,606	£209,550
Distribution	196,218	209,350
Rent, rates, and taxes	37,302	34,638
Management	46,546	48,453
Co-partnership	..	8,875
Superannuations	18,418	19,911
Miscellaneous	6,511	6,707
Expenditure, *less* residuals	£506,601	£537,484

RECEIPTS.

	1935.	1934.
	£	£
Gas	539,623	561,503
Rentals	91,213	89,225
Miscellaneous	1,375	1,312
	£632,211	£652,040
Gross profit	125,610	114,555
Less dividend, interest, &c.	129,916	135,330
Deficiency	£4,306	£20,775

Comparative Statement of Costs per Therm Sold.

	1935.	1934.
	d.	d.
Manufacturing charges	5·71	5·77
Less residuals	2·65	2·70
Net manufacture	3·06	3·07
Distribution	2·98	3·07
Rent, rates, and taxes	0·57	0·51
Management	0·71	0·70
Co-partnership	..	0·13
Superannuations	0·28	0·29
Miscellaneous	0·10	0·10
Expenditure, *less* residuals	7·70	7·87
Gas	8·20	8·22
Rentals	1·39	1·31
Miscellaneous	0·02	0·02
	9·61	9·55
Gross profit	1·91	1·68
Less dividend, interest, &c.	1·97	1·98
Deficiency	0·06	0·30

Comparing the principal items in the revenue accounts for the two years, it is seen that coal and oil cost less by £6,602, mainly by reason of a better make of therms per ton of coal and the smaller quantity carbonized—viz., 234,382 tons, against 244,644 tons. This saving, however, has been more than offset by the lower yield from residuals—£9,898—of which tar has accounted for £6,695 less, the receipts per gallon falling from 4·04d. in 1934 to 3·44d. last year. Carbonizing wages show a saving of £4,621, and repairs and maintenance of works and plant is less by £3,951. The total cost of manufacture alone was reduced by £17,842. With the exception of a small increase in the cost of prepayment meters and fittings, the expenditure on the other distribution items is less, the principal savings being in mains and services £5,992, and stoves £4,536. Rent, rates, and taxes are up by £2,664, while management and superannuation, &c., together are less by £3,400. There being no distribution of surplus profits, the co-partnership item disappears from the revenue account, thus showing a saving of £8,875. The total expenditure for the year is reduced by £40,782.

On the other side of the account, the receipts from gas realized less by £21,880, though total rentals improved by £1,987, chiefly on account of stove rentals, which brought in £4,594 more, doubtless by reason of the increase in the prepayment charges mentioned above. The balance to the net revenue account has improved by £11,055, and dividend and interest, &c., is less by £5,414, thus reducing the 1934 deficit of £20,775 to £4,306.

The comparison given on the following page of the various working results and prices realized indicates that these have been well maintained.

There are no outstanding differences in the balance-sheet with the exception of the item of expenditure in suspense. This has increased from £44,582 to £68,465, and indicates an increased business during the year in the sales of apparatus on hire purchase.

	Year 1935.		Year 1934.
Make per ton of coal, therms	72·36	..	71·52
Coke made per ton of coal, cwt.	10·09	..	10·39
Tar made per ton of coal, galls.	10·06	..	9·83
Ammoniacal liquor made per ton of coal (8 oz.), galls	37·94	..	37·91
Coals cost per ton	20s. 7·03d.	..	20s. 3·90d.
Coke realized per ton	22s. 6·13d.	..	21s. 8·24d.
Tar realized per gall.	3·44d.	..	4·04d.
Ammoniacal liquor realized per butt	1s. 3·60d.	..	1s. 5·60d.

Statement of Gas Made, Sold, &c.—Therms.

	1935.		1934.
Made	16,935,925	..	17,437,650
Quantity charged	15,582,340	..	16,052,385
Correction for temperature, &c.	214,130	..	334,260
Quantity sold	15,796,470	..	16,386,645
Quantity used	495,300	..	522,070
Not accounted for	644,155	..	528,935
	16,935,925	..	17,437,650

Conjoint Conference of Public Utility Associations

Fourth Annual General Meeting

The Fourth Annual General Meeting of the Conjoint Conference of Public Utility Associations was held at 28, Grosvenor Gardens, S.W. 1, on Jan. 29.

Lord Mount Temple presided, and was supported by the three Vice-Presidents—Lord Falmouth, Sir David Milne-Watson, and Mr. William Cash.

The CHAIRMAN said that before proceeding with the ordinary business of the meeting he would like members present to know that the following telegram had been sent to King Edward VIII:

> *On behalf of the members of the Conjoint Conference of Public Utility Associations I desire to tender to Your Majesty the expression of their respectful and profound sympathy in the sad loss which You and the members of the Royal Family have sustained,*

and that the following acknowledgment had been received:

> *The King is touched by your kind message of sympathy and will be glad if you will express his sincere thanks to all who joined in it.*

The Chairman, continuing, said it would be presumptuous on his part to say anything in the praise of the late King. He was a man who shone in all the domestic virtues, was a strictly constitutional Sovereign, and was always ready to help anyone who needed help. In short, he suited the British nation as a Monarch above all Monarchs. The nation had been extremely fortunate in having such a monarch, and they felt confident that his son would follow in his father's footsteps.

The members present then stood in silence for one minute as a tribute to the memory of His late Majesty King George V.

The Minutes of the Third Annual General Meeting, held on Jan. 31, 1935, having been circulated, were taken as read, confirmed, and signed.

Col. S. S. OGILVIE read a list of representatives nominated by each constituent member of the Conference to serve upon the Council for the ensuing year.

THE CHAIRMAN'S ADDRESS.

In moving the adoption of the Fourth Annual Report, the CHAIRMAN said:

When I read the Report some days ago I could not but feel that it bore very eloquent testimony to the success of the experiment begun tentatively a good many years ago and placed on a more formal footing in 1933. Indeed, we can now say with confidence that the experimental stage has been passed, and that the Conjoint Conference has become an essential permanent and powerful piece of machinery for safeguarding and furthering the common interests of the public utility undertakings of this country. Even to those who have watched the machinery in process of construction, and who have seen the goodwill, common sense, and give-and-take which have constantly been in evidence in operating it, the achievement appears a notable one, but to the man-in-the-street it must appear both remarkable and astonishing to find that such apparently conflicting interests as gas and electricity, which the Press delight to depict as eternally at one another's throats, and which are, of course, in keen competition, should be acting in complete harmony in regard to many matters.

Nor do we, in contradistinction to another League of which we hear much in these days, require to use "sanctions." Indeed, our Covenant does not make any provision for them. Community of interest suffices to keep us together, and in this connection I observe with interest that the water interests which, in the matter of mains and cables in highways, found it desirable—as, of course, it was entirely constitutional—to pursue for a time a separate course, have now once again added their volume to the main stream, so that their interests in these matters are once more coincident with those of the other constituent members. That is a matter for great congratulation.

Once again the need for close co-operation is very clearly shown by the Report, for the matters dealt with during the past year have not only been numerous and varied, but also of very great importance. This is specially true of legislation. Public utilities touch the life of the community at so many points that there are few legislative measures which do not affect their interests in greater or less degree, and last year's legislative programme was heavy in this respect.

The Housing Acts of 1935—one for England and one for Scotland—are cases in point, and those who conducted the negotiations with the Ministry of Health, and who arranged that various important amendments should be moved during the passage of the Bills through both Houses of Parliament, are to be congratulated on their success.

Obviously the wide and comprehensive powers conferred upon local authorities by these Acts, enabling them to carry out clearance and re-development schemes in towns, and for that purpose to demolish buildings, to change the line of streets, alter their levels, &c., affect gas, water, and electricity very closely, not only in respect of sub-surface works, the position of which may have to be altered, but also in respect of buildings and works in which their business and processes are carried on.

With regard to the former, satisfactory protection has—as the Report points out—been secured, provision being made for the payment of compensation when mains and cables have to be moved as the result of operations carried out by local authorities under the Act.

Further, the lands and buildings of statutory undertakers cannot be compulsorily acquired, nor can such buildings be ordered to be demolished on the ground that they are obstructive, and if we did not succeed in obtaining the right to compensation for loss of business caused by the demolition of buildings, or for the value of piping and wiring in houses which are pulled down, it was not through any failure to press our claims.

When we remember what a free hand Governments are prone to give to local authorities in regard to housing and slum clearance matters we realize how notable are the achievements which the concessions obtained represent. Equally satisfactory are the privileges and concessions obtained in the Restriction of Ribbon Development Act, under which we shall no doubt see considerable activity exercised by local authorities in the near future.

The Vigilant Eye.

I could cite other examples from the Report, but I have said enough to show the value of the Conference in keeping a vigilant eye upon proposed legislation, and in taking immediate and effective measures to secure its amendment if it should be likely to prejudice the interests of public utilities.

In this connection I think I should point out that your

officials have been very active in taking an interest in Bills before they are brought in, or before they take a final form. It is very much better to exercise your influence upon the Promoters of Bills before those Bills are made public. Much more can be done—and in fact has been done—by adopting this course than otherwise would be the case.

In addition, it is abundantly clear from the Report that there is an increasing readiness on the part of Government Departments to listen to the representations put forward on behalf of the Conference, and to accord to them the weight and authority which they merit. This is a very satisfactory state of affairs, particularly in view of the fact which I have stressed before, that there is an ever-increasing tendency on the part of the Government to take a hand in the regulation of industry, or to take steps which may hinder its operations.

Turning now to your relations with bodies other than the Government and Parliament—and these paragraphs are of considerable importance—I am pleased to see that there is some reasonable hope of the resumption of negotiations with highway authorities in regard to an agreed clause dealing with mains and cables in highways. It was unfortunate that negotiations should have broken down just when agreement was in sight, for it is very much in the interests of both parties that a satisfactory *modus vivendi* should be reached. Quite clearly public utilities cannot—either in their own or their consumers' interests—permit any serious whittling away of the rights conferred upon them by Parliament, but they are anxious to meet the highway authorities as far as possible. I feel that the Conference's powers of negotiation will be materially strengthened by the close co-operation of the Water Interests in the future.

Bearing in mind the big road programme which is being launched by the Ministry of Transport, and also the even more elaborate systems of road-making and road-surfacing which are being adopted, it would appear that common accord was particularly necessary at the present juncture, and I venture to suggest to those authorities who are responsible for the rejection—lock, stock, and barrel—of the clause agreed by the Negotiating Committee that they would be acting in the common interest if they were to modify their present attitude.

An Epidemic.

Something of an epidemic of common form clauses in various stages of development appears to prevail at the present time. There is the clause which is proposed in order that protection may be afforded to other public utilities by any individual undertaking which is promoting a Bill. This is really a domestic matter, and I have no doubt that an amicable arrangement will be arrived at.

In another category we have the proposals of the Deputy-Chairman of Ways and Means regarding the drawing up of common form clauses for insertion in Local Government legislation. If effect is given to this proposal the proceedings of the Committee appointed to draw up such clauses will have to be carefully scrutinized, for in recent years many clauses for which normality has been claimed by promoters have appeared anything but normal to those who would be affected by their application.

The subject of coal is fully dealt with in the Report, but I make no apology—no apology at all—for touching again upon a question which is of such importance to so many of you. In the first place, I would like to take this opportunity of thanking you for the kind references in the Report to the various occasions upon which, in one form or another, I have intervened in the hope of serving your interests. If these interventions have proved of assistance to you I feel amply rewarded. It seems to me of the utmost importance that no opportunity should be lost of impressing upon the Government and all others concerned that a scheme for the permanent reconstruction of the coal industry is an outstanding national necessity, and the wise and generous lead given by the constituent members of the Conference in the present crisis, added to the fact that in the aggregate they form one of the largest coal users in the country, seems to me to give the Conference a special right to do so. They use 30 million tons of coal a year, which is a very large consumption.

It is, of course, a great achievement to have warded off—as we hope has been done—the disaster of a general stoppage in the coalfields, but the steps taken to do so are not a cure; they are a palliation merely and afford no guarantee against a recrudescence of the trouble. If the coal industry is to be restored to a permanently healthy state and not merely rendered temporarily comfortable, the disease from which it suffers must be eradicated. I believe, and I know that you share my view, that the centre of infection is the Coal Mines Act. Whatever may have been the intention of Parliament when that Act was passed, its operation has had the effect of bolstering up inefficient and uneconomic mines, and has thus prevented the concentration of production in pits which are efficiently and easily worked. In consequence the latter have assigned to them quota well below their production capacity, and have either to work on that basis or to buy quota from the owners of inefficient pits, who in many cases find it more profitable to sell quota than to win the coal. In either case the cost of the coal produced is unduly increased, with the result that the demand for it is reduced. A vicious circle is thus established, detrimental to the interests of coal-owners, coal-miners, coal consumers, and the country at large.

As a former Minister, I can understand the hesitancy of the Government to take the steps necessary to break the circle, for the concentration of production in efficient pits, which is the only true remedy, means the closing down of many pits and consequent unemployment, but what is the Government for except to tackle these problems and solve them for you. But the situation has got to be faced; further tinkering with the present system will merely cause an even more difficult situation in the future, and I believe that if it is boldly tackled now, when industry is expanding and there is greater prosperity, the problem of dealing with displaced labour will definitely prove, in my opinion, to be less difficult than is anticipated.

Rating and Valuation.

Another of your Committees which has had a busy year is that which deals with rating and valuation. The Act of 1925 has created a number of problems peculiar to public utility undertakings. Some of these problems have already been dealt with by the Central Valuation Committee in so far as that body is in a position to do so, and it is to be hoped that the recommendations contained in the Memorandum to which reference is made in the Report will be approved. It is, for example, definitely unsatisfactory, particularly in the case of extensive hereditaments, that there should be no alternative to assessment by Assessment Committees. Equally, Courts of Quarter Sessions have not proved satisfactory as tribunals of appeal in connection with rating and valuation matters. What is required is an Appellate Tribunal which is in a position to deal with cases in the light of the principles involved, and not upon local considerations. One knows from experience that Courts of Quarter Sessions have not got the expert knowledge to enable them to deal with highly technical matters, and no one will deny that the rating and valuation of public utility undertakings fall within that category.

I will conclude by congratulating you again upon the achievements of the Conference, and by emphasizing the importance of bringing within its purview all matters of common interest to the great services which you represent. The old dictum that God is on the side of the big battalions receives constant confirmation in these days, and with whole-hearted co-operation the force which you have created, and which is already a proved success, will grow in strength to the great benefit of each of the units of which it is formed.

Slowly, but, I feel, surely, we are getting on to an even keel, and certainly if we look round the world we may congratulate ourselves on the fact that we are British. No other country in the world is as prosperous as we are, and in no other country is the outlook so bright as that which now faces the industrialists and people generally of Great Britain and Ireland.

There is only one thing that can retard our progress as a country, and that is war. I cannot help feeling that I am voicing your feelings when I say that it is the duty of this Government to keep us out of any war. War is a costly explosive; not only are windows broken but the the whole fabric of the house is shaken and very often totally destroyed. We have done a great deal towards what seems to be peace in the last six months, and I think the time has now come when Industrialists should tell the Government—who are a little bit uncertain as to where they should direct their steps—that they are determined that peace must be maintained.

Importance of the Conference.

Lord FALMOUTH, in seconding the Resolution, said that the Report did show the immense variety and importance of the work of the Conference. When the Conference had first been formed some doubt had been expressed in certain quarters as to whether anything successful would come out of the Conjoint Conference, but he thought those people must be completely disillusioned when they looked at the Report which had been placed before the meeting that afternoon.

He congratulated the various Committees on the work that they had done. There was a question he would like

to raise in connection with the World Power Conference, which, as members were doubtless aware, was to be held that year in Washington. Lord Falmouth read a letter which he had received from Sir Harold Hartley, Chairman of the British National Committee, indicating the necessity for further financial support, not only to cover the normal annual expenditure, but also in connection with the additional expenses which would be incurred this year in regard to the British participation in the Plenary Meeting at Washington.

Lord Falmouth said that he thought the Conjoint Conference might consider whether it was not possible in some way to raise the necessary sum of money. It was very essential for the prestige of Great Britain that they should be adequately represented at the World Power Conference, and that they should not be handicapped by shortage of funds.

Sir DAVID MILNE-WATSON supported the Resolution, and in doing so said that everyone who had interested himself in the subject must realize the enormous amount of work which was done by the Conjoint Conference, and which was borne out by the valuable Report which had been presented to them that afternoon. The work of the Conference had not only been considerable but it had been carried out in a most businesslike way. As the President had indicated there were present that afternoon representatives of many opposing interests, but it had been found that although they had their rivalries they also had their mutual interests, and by acting together it was possible to make much more progress than if they spoke as individual units. Events might well arise in the future in which it would be of the greatest value to understand each other.

The Gas Industry and the Coal Mines Act.

He would like to say that he most heartily agreed with everything the President had said on the subject of coal. He could speak with knowledge on this point, as the Gas Industry consumed between seventeen and eighteen million tons of coal a year. That Industry was thoroughly dissatisfied with the working of the 1930 Act. It was absolutely wrong that inefficient pits should be kept alive. It was fully appreciated that to close certain of these pits would lead to unemployment, but that was an issue which had to be faced and the sooner the Government did face it the better. The public utilities had done their best to assist by agreeing voluntarily to increase the price of coal on their contracts, but in doing that they did not imagine for one moment that they had found the solution to the problem. That problem still had to be solved, and personally he was convinced that Part I. of the Coal Mines Act of 1930 should be abolished, and the sooner the country and the mining industry realized that the better. It was useless to keep a number of miners on part-time work in inefficient pits. Both the gas and electricity industries were taking steps to close their inefficient works and generating stations and similar action should be taken by the coal industry.

With regard to the point raised in connection with the World Power Conference, he heartily endorsed all that had been said by Lord Falmouth. Unless Great Britain was able to take its full share in the Conference at Washington it would lose ground and foreign countries would take their contracts elsewhere. Other nations were sending large delegations to Washington with the intention of impressing the world generally that they were the people to whom orders should be given and it was necessary to take steps to dispel this impression. He sincerely hoped the Conjoint Conference would be able to do something in this matter.

The Resolution for the adoption of the Fourth Annual Report and Accounts was then put to the meeting and unanimously carried.

Election of President.

Mr. W. B. WOODHOUSE said that the Council of the Conference had asked him on their behalf to move that Lord Mount Temple be re-elected President for the ensuing year. The Conference very much appreciated the interest Lord Mount Temple had taken in their affairs, and the trouble he had gone to in putting before the public the true situation regarding coal, both in the House of Lords and other places. Lord Mount Temple had been a most active and helpful President and the Conference could only express its appreciation by asking him if he would consent to continue to help them by acting as their President for another year.

Mr. WILLIAM CASH seconded the motion and it was carried unanimously.

Lord MOUNT TEMPLE thanked the meeting, and said that he gladly undertook the office because he felt it was in the national interest that the views of so important a Conference should be put before the public.

The CHAIRMAN then moved the re-election of the existing Vice-Presidents—namely, Lord Falmouth, Sir David Milne-Watson and Mr. William Cash.

Mr. H. G. WILLIAMS, M.P., seconded the motion, which was carried.

Mr. WOODHOUSE said that although it was not upon the Agenda he felt sure members of the Conference would not wish to go away without some reference being made to the valuable work performed by the Joint Hon. Secretaries. Speaking as a member of the Council he knew the enormous amount of work done by them, and this was of tremendous assistance to the Council. He would like to take the opportunity of asking members present to pass a vote of thanks to the Joint Hon. Secretaries.

The CHAIRMAN seconded the proposal and said he would like to include in it the staff, who had worked very hard during the past twelve months.

The vote of thanks was carried unanimously, and Col. OGILVIE thanked the meeting on behalf of Mr. Warner Terry and himself and the staff.

The proceedings then terminated with a vote of thanks to Lord Mount Temple for presiding.

Meeting of the Council.

Immediately following the Annual Meeting, the first meeting of the Council appointed for the year was held.

Mr. William Cash was unanimously elected as Chairman of the Council for the ensuing year, and upon taking the Chair he moved a very hearty vote of thanks to Mr. W. B. Woodhouse, the retiring Chairman, which was carried unanimously.

The following Committees were then appointed: Finance, Executive, Coal, Rating and Valuation, and Parliamentary.

Col. S. S. Ogilvie and Mr. G. P. Warner Terry were unanimously re-appointed Joint Hon. Secretaries.

It was resolved that a meeting of the Council should be held on July 9, 1936, although probably it would be necessary to call a further meeting at an earlier date.

Meetings of the Rating Committee were reported, and speakers were selected to put the views of the Conference before the Central Valuation Committee when a deputation from the Conference waited upon them in March, 1936.

It was reported that the Coal Committee had decided that a Memorandum should be sent to each constituent member setting out the present position and the action which it was deemed necessary to take to safeguard the interests of public utilities in connection with the coal situation. This action was approved.

It was decided that each constituent member should be asked to study the draft of the new Public Health Bill, notifying the Conference of any clauses which would affect their interests, after which the question would be considered by the Parliamentary Committee.

Athletic and Social

Shrewsbury Gas Company's Staff Social.

The Shrewsbury Gas Light Company's staff social was held on Jan. 29.

Mr. C. M. D. Belton, Engineer, Manager, and Secretary, in the chair, was supported by Mrs. Belton, Alderman Adams (Deputy-Chairman), Messrs. W. O. Wilding, H. L. Grocott, and J. B. Gouldbourn (Directors), and representatives of the business and professional life of the town. Mr. Belton referred with regret to the absence, through illness, of Alderman R. D. Bromley, Chairman of the Company, and read a letter from him wishing all present a happy evening. The toast "The Guests" was proposed in felicitous terms by Mr. C. Crane, the M.C. for the evening. Mr. Andrew Scobbie replied.

Mr. A. P. Woodhouse, proposing "The Shrewsbury Gas Light Company," said it rendered indispensable service to the borough. It looked after the interests of its customers, was of great benefit to the people it employed, and gave no more than a reasonable profit to its shareholders.

Replying, Alderman Adams expressed appreciation of the work of the staff, adding that no company ever had a better servant or more able manager than Mr. Belton. He welcomed the opportunity of saying this publicly because it was the unanimous opinion of the Board.

A short whist drive followed, and the evening concluded with dancing. Mrs. Belton presented whist prizes to: 1 Mrs. Carpenter, 2 Miss Young; 1 Mr. Ward, 2 Mr. Young; specials, Mrs. Marshall and Mr. Tipton. A vote of thanks to Mrs. Belton was proposed by Mr. A. F. Chant.

Salesmanship and Advertising

by
W. D. ROWE

In which the Manager of the B.C.G.A. gave members of the Scottish Junior Gas Association (Western Section) some valuable hints on these two most important phases of the Gas Industry's activities.

There is no aspect of salesmanship which has not been discussed from every viewpoint. What is there new to say? There is very little new, but there are a number of fundamental principles with which most people are in agreement that will bear constant repetition.

I always ask ladies of my acquaintance what they expect from salesmen. Women are certainly the biggest buyers as far as the Gas Industry is concerned. What do they say about it? Two points stand out above all others:

(1) Courtesy at all times.
(2) Not too much over-persuasion.

So let us analyze the qualifications of a good salesman. I suggest the following:

(1) 100% *knowledge of what he is selling.*

Nothing is more likely to lose a sale than ignorance or partial ignorance of the commodity. Confidence is inspired by quick and intelligent answers to buyers' enquiries. Nothing can have a worse effect than wrong or misleading information.

(2) *Courage.*

In the competitive fields of to-day it is certain that gas salesmen will have a number of disappointments. Do not let them worry you. Rome was not built in a day. There is always to-morrow. You may get your prospective consumer in a different mood then, so the motto must be "Try, try, try, and try again."

(3) *Patience.*

Every householder is a potential consumer of gas, and consequently every conceivable type of person will be encountered. It is important that this should be realized, because it won't do to approach them all in the same way. The gas salesman must be a good psychologist. He must train himself to appreciate very quickly, and the quicker the better, what sort of person he is meeting, and he should deal with him accordingly. There are some who obviously know their own minds. Beware in such cases of trying to persuade them away from their own choice. If the salesman feels it is the wrong one, they should be led gently to some other topic, and then diplomatically brought round to what is thought to be the right one. When the prospective buyer is in a hazy condition as to what he or she wants, the job is easier because one can give them a lead, which they will in all probability follow.

(4) *Energy and alertness.*

There is a great deal in always endeavouring to make each prospective buyer think that he is just the one person you have been waiting to help. It is not easy, but it can be done. Nothing damps a prospective buyer's determination to buy than meeting with an indifferent and seemingly uninterested salesman. This matter of personal contact is of prime importance. It must not be forgotten that in selling gas or gas appliances, personal contact is nearly everything. Gas is not really a commodity but a service, and service requires the intimate description which can only be given in a personal interview.

I have already mentioned courtesy, and I do not think there is any need to stress that point. Courtesy costs nothing, but always pays. There is one more qualification, and that is honesty. By honesty I mean that your story must be the truth, the whole truth, and nothing but the truth. Honesty always wins in the long run, in all phases of life, and never more than in selling.

We have dealt with some of the qualifications of a good salesman and with some of the methods of dealing with prospective buyers. Let us now turn our thoughts to the Gas Industry. You will all, I am sure, admit that until a few years ago the Gas Industry had not very many good marks for salesmanship. Even the most ardent of stalwarts will admit that the "take it or leave it" principle was adopted, and the consumer had to go to the gas undertakings for anything he wanted. That has all changed now. Competition has awakened our one hundred year old Industry, and I believe I am right in saying that it has been re-born. In dozens, almost hundreds, of undertakings, gas salesmen are going out to get the business—and, what is more, they are getting it. In almost every phase of its daily life the Industry is adopting new and up-to-date methods, and we may well say "Get up-to-date with Gas."

Regarding your competitors, by all means find out what they are doing, what they can offer, and how it compares with your own proposals; but do not spend too much time on them. Fix your mind on your own work. Concentrate on the advantages of gas and its many applications, and you will find the stubborn walls will start to crumble. You must do all you can to persuade those whom you serve that, seeing you yourself are doing all you can, they must back you up in every way.

The Gas Industry has been very backward in its organization of after-sales service, very loath to advertise its wares, almost unconcerned with the matter of really good showroom and window display.

These are things which are absolutely necessary to back up a salesman's job. The more thoroughly they are done, the less difficult will be your hard task, and I do therefore ask you to become more and more interested in salesmanship and publicity, because, although they are necessarily only a background for you who are the players, such a background is vital to your work if the general public with whom you deal are to be responsive to your appeal to "USE MORE GAS."

Advertising.

Although great progress has been made in the last few years in the steps taken by gas undertakings to let the public know what gas can do for them, a great deal more will have to be done to keep pace with the intense competition existing to-day. I firmly believe that practically every undertaking of any size will need to assign the job of publicity to one member, at least, of their staff, so that he may give his whole thought and energy to bringing to the public notice what his undertaking can offer them. In the case of small undertakings this work may have to be dovetailed with some other work. But I do feel that some one person should be thinking all the time of the publicity question, and all members of the staff should be encouraged to pass their ideas on to him, so that an air of freshness may appear in the undertaking's publicity efforts.

With this in view, and realizing that there may be among you to-day many to whom publicity work may appeal, and a number who may possibly be picked out to do such work, I propose to suggest a number of the principal points which will have to be borne in mind. Even for those whose careers will not develop on the publicity side, the information will be of value, because in carrying out the many jobs which fall to you, it is essential that you should know what is in the mind of the person who is backing them by an advertising campaign.

Why is Advertising Necessary?—We have in gas a first-rate commodity well known to the general public, universally used for many purposes, and available in the majority of homes throughout the country. There are two primary reasons why gas must be advertised—first, so as to sell *more* gas; secondly, because the Gas Industry has to-day three very virile competitors who are straining every nerve to oust gas in existing premises, and to forestall it in new premises.

The advantages of selling more gas will, of course, be obvious to you, but the necessity of getting in first in new fields is of prime importance, because when a commodity—whatever it may be—is dug-in in the mind of a customer, it is generally a very difficult job to get it out of their minds. For these reasons it is absolutely necessary that every possible publicity method should be used to keep the existing customer advised of the many uses of gas, and to impart to the non-user and the potential user the advantages of flexibility, reliability, and economy which gas has over other fuels in almost every sphere. Among other reasons for advertising, one should not forget that gas is a public utility, and, being so, it is the bounden duty of those who supply it to offer it to the community at the lowest possible price, and such price can only be reached by increased sales. In the battle for increased sales which is, of course, fought by you and your colleagues, you can have no better ally than good advertising and good general publicity. Let us take it, therefore, that we have satisfied the inquisitive person who says "Why?"

When Should Advertising be Carried Out?—In many businesses this is an all-important question, and is often so in the Gas Industry. Actually, there is no time of the year when gas cannot be advertised for some use or other, and it is obvious that cooking and heating will be advertised more intensively in the winter months and hot water and refrigeration in the warmer seasons. But it is imperative, before a campaign is started, that all the many preliminaries should be thoroughly prepared so that the attack may proceed without a hitch. Gas itself is always available, but it is absolutely necessary that the appliances, duly tested, should also be ready in quantities likely to meet the demand. It is also equally important that all members of the staff who are to deal with the orders are thoroughly versed in that part of the work which it is their business to carry out. In the case of the salesman there is no minute detail about the appliance of which he should be ignorant. Customers are often very hasty, and the receipt of incorrect information often lays the seeds of discontent which may grow in the customer's mind to absolute prejudice. We may now assume that we are ready to launch a publicity campaign.

How Shall Advertising be Prepared?—This is where the expert comes in, and I intend to speak rather more fully on this question because it is of great importance. It is generally admitted to-day that, as far as civilized countries are concerned, the best method of advertising is by using the newspapers. It is not by any means the only method, but in these days of crowded cities and towns, making individual contact is difficult, and in this era of improved education the easiest way to get into preliminary touch with the consumer is through the newspapers. Other methods may be regarded as what we term a "follow-up." Now as far as newspapers are concerned, it is essential to know the quantity and the quality of their circulation. Quantity alone is not sufficient, for what really counts is "pulling power." Unless you have expert advice, this "pulling power" can only be acquired by experience, and it is therefore important to note, as accurately as possible, the results obtained. This can often be done by offering a leaflet or by including a coupon in your advertisement. But whatever means are used the circulation of the newspaper and the relation of its circulation to its advertisement rates must be very carefully considered.

Allocation of Advertising.

Having decided how much money is to be spent, it is necessary to allocate this to the various methods to be used, and the portion available for Press advertising must be considered from the point of view of the length of the campaign and the size of the spaces to be taken. I need hardly emphasize that nearly all advertising is a repetition of fundamental facts, these facts appearing from time to time in a new dress. Never be afraid of repetition. It is often said that a famous advertiser once failed to get a reply until an advertisement had been repeated seventeen times. Unless you have a very large appropriation—in other words, if you have to resort to a series of short campaigns—get commanding spaces, spaces which will appear at the head of the page and which will dominate the page. Having booked the space it is essential that the copy matter should be arresting and designed to catch the public eye. The following are several golden rules regarding copy:

(1) Don't cram the space with matter—leave plenty of "white."
(2) Write intelligent plain English—don't use technical terms.
(3) Don't write something which pleases people in your own business. It is the public you are after, and it is always useful to get an outsider to look at your copy before you finally approve it.
(4) Above all, be truthful—catchpenny distortions of the facts always come to grief in the end.
(5) Boost the advantages of your own commodity and don't attack your competitors. By doing so you are only giving *them* an advertisement. No slanging battle in the advertising columns has ever been helpful to either side.

Having decided on what you are going to put in your advertisement, it is now necessary to arrange it typographically and pictorially. This is a job which, unless you have a really first-class typographer and commercial artist available, you should leave to the newspaper office. More and more newspaper offices have to-day on their staff experts in what is termed "lay-out," and they are usually only too pleased to assist advertisers in this direction. It is, however, important that whoever is handling the job from the advertiser's side should be thoroughly conversant with details like column width, cost of setting, and have a good elementary knowledge of the technique of printing, process-engraving, and stereotyping.

We have now booked the space, written our copy, and passed the lay-out of the advertisement. What can we do to support the advertisement when it is published? There are a number of links which can be added to the chain. You can produce an attractive leaflet or booklet which can either be mailed or distributed by hand. Above all, and this is a link which has often been neglected by the Gas Industry, you can have a bright and topical display in your showrooms and windows. The importance of live up-to-date displays as a support to sales promotion campaigns is tremendous.

You can also back up your campaign by using posters. If it is not possible to go on to the hoardings with large posters, then posters can be used on the undertaking's premises, and on the vehicles which are used by the distribution staff.

The first and foremost object of true advertising is to create a desire. If you can, by one or other of the methods mentioned, create a desire in someone's mind, then half the battle is over.

Discussion.

Mr. A. Bujnowski (Glasgow), in opening the discussion, paid tribute to Mr. Rowe in the selection of such a subject and to the able manner in which he had dealt with it. It was undoubtedly a fact that until recently publicity had been neglected, and it would help tremendously if the large undertakings appointed an officer whose sole duty would be to look after the advertising and publicity side of the business.

Mr. R. Cowie (Hawick) agreed that personal contact was of the greatest importance and that the consumers were more ready to talk to some one they knew. In advertising, they were not only up against three main competitors, but had to fight to catch the public eye against the publicity of motor cars, vacuum cleaners, cigarettes, &c. If they only realized this, their publicity might be more striking.

Mr. Walker (Kilbarchan) thought that a great deal more could be accomplished by "stunt" advertising in one's own district. The holding of gas exhibitions was also an excellent advertising medium.

Mr. W. Gledhill (Stirling) thought that a portrayal of the latest appliances in colour would be much better. In Stirling they had recently had an exhibition of floodlighting which had attracted a good deal of attention, and more should be made of this medium of advertising.

Mr. N. C. Sturrock (Greenock) considered that gas salesmen ought to know all about electricity but ought not to introduce the subject until the consumer had spoken on the subject; then the facts and figures should be given with clarity and forcefulness. Regarding the circularizing of consumers, with advertising material, he thought that the envelopes should be sealed, as it was more personal.

Mr. J. Greig (Glasgow) asked if "inspired articles" in the local papers were of much value. He would also like to know how Mr. Rowe assessed the value of advertising.

Mr. S. McGown (Glasgow) said that many of their advertisements were sadly lacking in "pulling power." Advertisements of attractive design and witty themes would tend to give that pulling power. He thought that section sketches of photographs giving full details of service, size of service, meter, appliances, costs, &c., would be of more use than the ordinary photographs of installations which appear periodically in "A Thousand-and-One Uses for Gas."

Mr. Sorley (Hamilton) said that where two municipal suppliers were owned by the same Town Council, the spending of money on advertising was more or less wasted. The personal touch was all that was required here.

Mr. K. Graham (Glasgow) asked why gas was not put "on the air."

Mr. J. K. Fraser (Glasgow) said that in advertising they should keep to King's English and be warned at all times against using slang. They should be truthful and honest and never make sales by "catchpenny" methods, because in its wake, pounds were lost. Meter surveyors, fitters, &c., were potential salesmen, but had not the time to push sales.

Mr. Rowe, replying to the discussion, stated that it was essential that the salesman should know 100% of what gas could do. It was also most important in advertising to have the co-operation of the printers, as this proved very beneficial. Stunt advertising was very good, and more of it ought to be done. Interest on the social side must be maintained by the heads of the departments, and more goodwill ought to be created by these men. The more movement one could obtain the better the window display, and he referred to the great interest which was shown in the stereoscopic slide which the B.C.C.A. had recently produced. In the industrial advertising of gas personal contact would sell more gas than by advertising because advertising did not appeal to the general public but only to the small community using gas for industrial purposes. Colour advertising unfortunately was too dear at the moment, but the time was rapidly approaching when this medium would be more exploited. A further point was that poster advertising must be striking and that child appeal gave an arresting poster. In order to sell more gas in new housing schemes it was a good idea to have one of these houses fitted up as a show house and invite consumers to come and see how gas could help them in the home and give them more leisure. Every encouragement ought to be given to the staff and fitters to increase the gas sales, and to this end a small commission ought to be paid.

A NEW METHOD OF
Determining Ignition Temperatures of Solid Fuels

By JOHN ROBERTS, D.I.C.

In which the Author details an improved apparatus, made from readily available laboratory equipment, for the determination of glow, ignition, and flash points of various solid fuels.

The ignition temperature of a solid fuel which is to be used for domestic purposes is an important property, which it is desirable to determine and evaluate readily. An open-grate fuel should be capable of ignition almost as easily as household coal, and it should be of such character that it reaches the heat-radiating state even more readily than coal. A fuel of low ignition temperature "picks up" quickly on a low fire, and this advantage is not restricted only to the open grate but extends also to closed stoves. It is often found that a hard-burnt coke is not sufficiently flexible in a domestic boiler, necessitating relaying and the addition of fresh kindling material, where a less completely carbonized fuel would "pick up" without difficulty, allowing combustion to proceed in a downward as well as an upward direction.

Many different methods of determining ignition temperatures have been investigated by a number of research workers, the main principle employed being the passing of preheated air through the fuel in a heated chamber and recording the temperature rises in both the fuel and the heated chamber. When the fuel temperature is observed to rise more rapidly than that of the chamber, or furnace, it is assumed that ignition has taken place. In several methods the gases given off are analyzed for the presence of CO_2, as an indication of combustion.

The temperature rise is not always a sure indication of combustion, especially with fuels which become exothermic at temperatures below the ignition point, and the presence of CO_2 may, in certain cases, be due to its direct evolution from the fuel. Further, as the size of fuel used is generally *minus* $\frac{1}{8}$ in., it is possible to obtain misleading results in some instances. In any event, the apparatus required is frequently elaborate, comparatively expensive, and its use involves much time, especially where it includes the analysis of the gases.

It was felt by the writer that the process could be materially simplified, and that a simple apparatus which could be rigged up from material available in almost any laboratory would be an advantage, provided it would yield reproducible results with an accuracy of 1%.

The Apparatus.

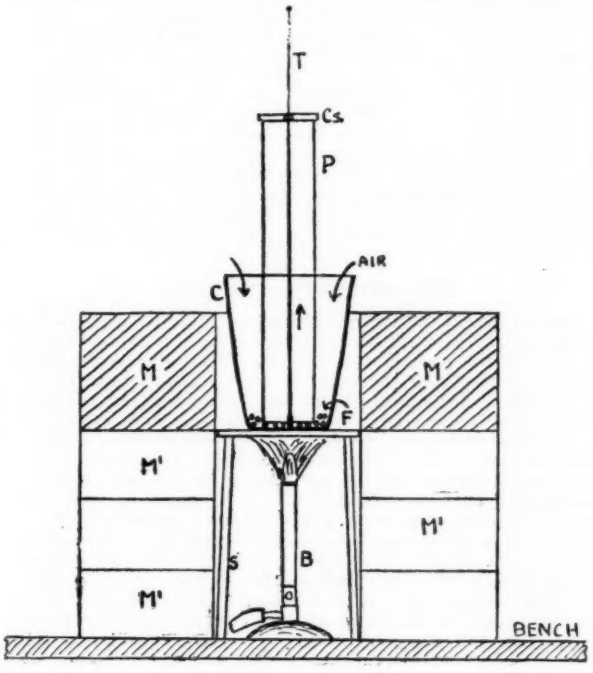
In the apparatus which the writer has devised, not one part of it was specially made for the purpose, but merely adapted. It consists essentially of a Salamander crucible, *C* (fig. 1), size *A*6, 6$\frac{1}{4}$ in. high, 4$\frac{1}{2}$ in. diameter at the top, into which a "Pyrex" glass chimney *P* is inserted. This chimney is 2 in. diameter, and 12 in. long. The crucible rests on a tripod stand *S*, and is surrounded with a "Moler Economite" insulating block *M*. The crucible is heated by means of a $\frac{1}{2}$-in. bunsen burner *B*, and a thermometer *T* reading to 650° C. is placed within the glass tube, resting on the bottom of the crucible. The whole is assembled as shown in fig. 1.

The sample of fuel is very carefully prepared, being quartered in the usual way, and reduced to pea size, $\frac{7}{16}$ in.-$\frac{1}{2}$ in. In breaking down the fuel, each piece greater than $\frac{1}{2}$ in. must be broken individually, without mashing the smaller particles. This is essential in order to avoid over-crushing and discarding the softer portions. If the fuel is naturally all soft, a pliers or nut-cracker is best used for sizing.

The Test.

About 15 grams of the fuel *F* are used in the test, one layer on the base of the crucible and the remainder between the crucible and the outside of the tube, rising to about $\frac{3}{4}$ in. The glass tube rests on some of the coke, being raised $\frac{7}{16}$ in. above the base of the crucible, the tube being marked as an aid. The thermometer is then inserted in a central position in the glass tube, with the bulb in direct contact with the bottom of the crucible but not in contact with any fuel particles. Suitable means are employed to secure both tube and thermometer in position. A cork *Cs*, cut to form 3 fins, keeps the thermometer in a central position.

The "Moler" block and supporting bricks *M*' ensure protection from draughts and considerably reduce radiation losses, thus economizing in the consumption of gas. On heating up, the "Pyrex" glass chimney acts as an upcast, while the annular space between it and the crucible becomes the downcast. Air thus enters and takes a downward path, becoming preheated in its descent; it then passes through the fuel bed to the interior of the tube, up which it ascends, as indicated by means of arrows. The velocity of the air current is roughly about 1 ft. per second, but tends to increase as the temperature rises, although both columns of air increase in temperature.



Apparatus for the Ready Determination of Glow, Ignition, and Flash Points of Various Fuels.

When testing a semi-coke in this manner, it will be found that after about 17 minutes or so a particle of coke immediately under the tube is seen to glow. The temperature at this stage is reported as the *glow point*. About 30 seconds later it will be observed that two or three other particles begin to glow. The temperature at which this takes place is recorded as the *ignition* point. It is not considered advisable to rely solely on the first glow, as the sample may contain perhaps only one fragment of low ignition temperature, and this would not be representative of the average sample, but three fragments represent a fair proportion of those on which the glass tube rests, and which are the first to ignite.

As the heating proceeds, combustion spreads around the tube, and in due course small flames of burning gas may make their appearance. Later, when the temperature reaches about 490° C., a flash of flame takes place over the

fuel bed when testing semi-cokes. This point is recorded as the *flash point*. The test is then stopped, the tube withdrawn, and the crucible removed and cooled. This completes a test as far as ignition temperatures are concerned, except that a repeat is invariably carried out.

Accuracy Obtainable.

The first critical question likely to arise is whether the thermometer actually records the temperature of the fuel which is about one inch away from it. This was settled by successive tests with the same fuel, where the thermometer in the second test was almost in contact with the fragment which gave the initial glow. In the second test the glow point was 3 degrees *higher* than with the thermometer in the central position. Therefore, as the results are all relative, and the error, if any, is less than 1%, it was preferred to keep the thermometer in the central position when testing smokeless fuels.

The deciding factor as to whether an experimental method is of any value is the ease and accuracy (or otherwise) with which repeat results can be obtained. In this case, in spite of the simplicity of the apparatus, results can frequently be obtained agreeing to within less than 0·5%, and we often find that successive experiments agree exactly. If a difference of more than 5° C. in the ignition temperatures is observed, a third test is made as a further check. In over 100 tests, it was only once found necessary to proceed further than this, owing to the fact that the fuel was a sample of coke which contained portions carbonized over the range 450° to 800° C. No difficulty has been experienced with fuels carbonized at 500° to 700° C., and 500° to 800° C., such as are found in normal medium-temperature smokeless fuel samples. The following is the record of successive tests made on succeeding days with a low-temperature briquette, in which cases no precautions were taken to dry or to weigh the fuel, nor in respect of maintaining constant gas pressure.

Date—Oct. 3, 1935. Fuel—L.T. Briquette.

Time.	Mins.	Temp., ° C.	Remarks.
3.20	0	Start	
3.30	10	320	
3.32	12	375	
3.33½	13½	395	
3.34	14	410	First glow
3.34½	14½	422	Few spots glowing
3.36¾	16¾	495	Flash of flame

Date—Oct. 4, 1935. Fuel—L.T. Briquette.

Time.	Mins.	Temp., ° C.	Remarks.
10.06	0	Start	
10.16	10	310	
10.18	12	373	
10.19½	13½	395	
10.20	14	410	First glow
10.20½	14½	422	Few spots glowing
10.23½	17½	495	Flash of flame

We understand that this particular fuel has been reported as having an ignition temperature of 280° C., as determined in another method, but we are satisfied that it does not visibly glow at 400° C. when tested by our method.

The time factor is ignored when testing ignition, as distinct from combustibility, and the crucible may be used either hot or cold at the start.

Relative Ignition Temperatures.

The following record of typical results (Table I.), obtained with fuels differing widely in character, are all consistent with the properties of the fuels as observed during their behaviour in heating appliances. At the two extremes we have on the one hand a very hard beehive coke, containing only 0·3% of volatile matter and 11·4% ash, which exhibited only the slightest trace of combustion at 560° C., while on the other hand a woody German lignite ignited at 185° C. Black charcoal is frequently regarded as a standard of comparison, and this has a glow point of 330° C., and an ignition point of 360° C. Of the manufactured fuels, the nearest approach to charcoal in physical character is the Cannel Char.

A well-made typical L.T. fuel should have an ignition point of about 450° C., while several were found to be lower than this. Cokes made at medium temperatures are rarely uniform throughout, but contain sufficient black semi-coke to render them readily ignitable in practice. This is reflected in the results given in the table. The influence of the carbonizing temperature is also shown in the case of the French fuel, as the portions near the walls of the oven have higher ignition temperatures than the rest of the fuel, but the ignition temperature of the average sample is lower than that of the middle section. The ease with which a coke can be ignited in practice will depend on whether it contains a sufficient proportion of under-carbonized coke.

Ignitability of Cinders.

It must be borne in mind that the ignition temperatures given in Table I. are not absolute values, but must be regarded as relative ignition temperatures. Different methods of determination will yield different results. Much depends on the condition of the fuel used in the test, particularly as to size. If the fuel is very finely crushed, it is possible by reducing the whole to one denominator to destroy the distinctive characteristics of certain portions of it. Sieving after fine crushing will also affect the results, in that the softer portions may be discarded. Take cinders, for example; we have previously called attention in this journal to the ready ignitability of coke cinders. The results shown in Table I. confirm practical experience. This property is due to the fact that partial combustion of the coke brings about a diminution in the thickness of the cell walls, and the fractured surfaces resemble pumice surfaces. These thin and fractured cell walls are easily ignited by the kindling agent. If, however, the cinders were crushed to pass a ¼ in. mesh, the probability is that the oversize would consist entirely of hard coke, which might even be more difficult to ignite than the fresh coke, while the readily-ignitable portions would have disappeared in the fines. In testing cinders they must be broken gently, preferably with the fingers, as far as possible. Another reason why pea-size fragments were selected is the fact that it is the corners and protruding portions of about pea size that are the first portions to become ignited when starting up a domestic fire.

TABLE I.—*Relative Ignition Temperatures, ° C.*

Fuel.	Glow Point.	Ignition Point	Flash Point.	Remarks.
Woody lignite (German)	160	185		
Earthy lignite ,,	160	180		
Dark-brown charcoal	200	200		Partially-charred wood
Black charcoal	330	360	460	
Fusain (No. 2 Rhondda Seam, S.W.)	394	445	500	Pieces ⅛–¼ in.
Anthracite (Big Vein, S.W.)	518	522		
High-temperature cokes—				
Beehive (Durham)	560			Only slight evidence of combustion
Horizontal	510	550		London gas-works coke
,,	530	550		Gloucestershire coke
,,	473	485		Volatile, 2·9%. Ash, 2·3%
Continuous vertical	494	505		
,, ,, re-used	472	482		
Continuous vertical grate cinders	464	484		Picked from domestic grate
Low-temperature cokes –				
Cannel char	390	405	490	
Rotary (A)	405	430	490	
,, (B)	433	453		Typical L.T. fuels
Yorkshire (A)	400	425	(470)	as burning. No flash
Oxiglo (A)	426	440	505	
,, (B)	430	450	495	Carb. temp. above 600° C.
Staffs fuel	430	445		
,, ,, cinders	370	404		Specially picked cinders
Notts. fuel	431	450		
Yorkshire (B)	442	453	513	Typical L.T. fuels
,, cinders	412	425		
,, (C)	450	460	(475)	Gas burning. No flash
Indian Poira Coila	458	470	530	
M.S.K. retort fuel	450	462	498	Made from Shafton coal
,, ,, cinders	415	434		
Zuyderhoudt fuel	465	475		
Durham	430	455		
French (average sample)	438	447	507	Carb. temp. above 600° C.
,, (outer inch)	464	471	520	
,, mid-section	454	466	503	
,, inner section	426	455	473	
,, cinders (average)	416	428	520	

In some of the tests described in this article the cinders were picked out of the domestic grate, while in other cases the test fuel was used a second time. The re-used fuel, whether L.T. or H.T., gave lower values than the fresh fuel. Only one exception to this rule has been noted, and that was in the case of a special type of L.T. fuel, which, however, leaves no cinders in practice!

A free-burning open-grate coke should ignite as readily as cinders, and should have a glow point not exceeding about 465° C., and an ignition point not exceeding about 485° C.

Ignition Temperatures of Coals.

A slight modification of the test enables the ignition temperatures of coals to be determined. Smoky coals undergo distillation below the ignition temperature, evolving smoke, which would result in the deposition of tar on the tube and thermometer. This is obviated by the use of a "smoke stack," which consists of an aluminium tube, ¾ in. diameter and about 36 in. long. The one in use happens to be 34 in. long. This is inserted within the "Pyrex" tube, and supported so that it is about ½ in. above the fuel, and suitably secured. This tube now becomes the upcast, while the downcast remains as before, and the column in the "Pyrex" tube becomes a "floating column;" a little smoke tends to rise, and then descends to the inlet of the aluminium tube. No smoke escapes through the "Pyrex" tube. The aluminium tube should be heated slightly before use.

It is advisable to provide an outlet from the laboratory for the smoke. A fume cupboard serves this purpose.

Table II. gives the ignition temperatures of ten coals, together with the proximate analyses. It will be seen that in general, the higher the carbon content, or the rank, of the coal, the higher the ignition temperature. The rule is not an invariable one, as a number of influencing factors are involved, among which the proportions of the ingredients clarain, durain, and fusain are important, particularly fusain.

It will also be noted that Welsh steam coals have ignition points comparable with those of the semi-cokes given in Table I., while the less mature English coals have appreciably lower ignition points.

TABLE II.—*Relative Ignition Temperatures of Coals*, ° C.

Coals.	Proximate Analysis, %.				Glow Point.	Ignition Point.	Flash Point.	Distils at—
	Moisture	V.M. 950° C.)	Ash.	F.C.				°C.
S. Wales (N) . .	0·60	11·85	3·30	84·25	450	464	510	Smokeless
S. Wales (G) . .	0·70	14·30	3·10	81·90	425	446	510	430
S. Wales (B) . .	0·65	14·90	6·70	77·75	425	442	505	425
Forest of Dean (C)	2·55	34·10	5·80	57·55	376	490	500	300
N. Staffs. (M) . .	2·50	37·20	4·45	55·85	368	395		275
S. Staffs. (MC). .	12·05	36·60	4·25	47·10	315	320	490	265
S. Yorks. (MM) .	3·85	32·80	4·65	58·70	344	377		275
Warwicks (K) . .	12·10	32·50	3·55	51·85	327	332		260
Warwicks (H) . .	10·85	36·95	2·85	49·35	315	327		250
S. Yorks (G) . .	2·05	34·30	3·40	60·25	378	402	510	300

The Manufacture and Treatment of Gas Coke

by C. F. PETERSEN, of Newport, Mon.

From a Paper read before the Wales and Monmouthshire Junior Gas Association at a meeting at Cardiff on Jan. 25, in which the Author made special mention of the sale and use of coke for the open grate.

To secure a ready sale, gas coke must possess certain characteristics to meet local conditions and demands.

Ash.—This is an important factor in coke quality. The consumer, whether domestic or industrial, will often judge a fuel by the amount of ashes or clinker produced irrespective of its performance. There is still a tendency to buy coal on a price basis alone, with the result that ash contents of 15% and over are often found in the coke. The adoption of an ash content penalty clause in coal contracts would help the engineer to produce a fuel containing less than 10% of incombustible material. The effect of the nature of the ash upon the behaviour of the coke in various appliances is also very important, and in addition to the actual percentage by weight, the factors of bulk density and constituents need to be examined. An ash of light and voluminous nature, for example, will tend to cause more trouble in the open fire than a similar weight of heavy ash.

The constituents of the ash also have an effect, and in a recent research[1] it is stated that: "Heavy ash owes its density often to its content of iron oxide, and there is some evidence that this gives the fuel greater reactivity and ease of ignition."

The fusibility of the ash is a property which has very noticeable effects in the formation of clinker when the coke is used in hot water boilers and similar appliances. This factor may be neglected, however, when the coke is used in the open grate, temperatures under such conditions being comparatively low. Thus the manufacture of coke for the open fire proves a useful outlet for coals containing ash of low fusion point.

Sulphur Content.—Generally speaking, with the use of clean washed coal, a low ash content is accompanied by a low sulphur content. This is highly desirable in the coke, particularly in the open grate, where under exceptional conditions downdraught sometimes occurs. When coal is so burnt, downdraught causes smoke, which necessitates an immediate remedy. When coke is used, however, the passage of products into the room is not noticed by reason of their smokeless nature, and the blame for a sulphur dioxide-laden atmosphere is laid upon the fuel and not upon the chimney.

Moisture Content.—This usually depends upon the method of quenching employed, although after-treatment of the coke by wet washing may be a factor. The importance of a low moisture content is very great, inasmuch as a large amount of heat is necessary to raise the temperature of the contained water and vaporize it. Improvements in wet quenching methods have been introduced of late, but it is virtually impossible that under such conditions a zero moisture content can be consistently maintained except by after-treatment using an external source of heat.

The effect of the method of quenching upon the behaviour of the coke on combustion is of interest. From work carried out at Leeds,[2] it has been found that noisy combustion and "fliers" are dependent upon the method used for cooling the coke after carbonization, and not upon the moisture or ash content. It was found that in every case shock quenching of the coke by water produced a noisy burning product.

An interesting method of attacking the question of moisture content from a different angle has been experimented with at Huddersfield.[3] The circulation of hot flue gases through a hopper containing wet quenched coke has been practised, with encouraging results. The method appears to have great possibilities, especially in connection with wet coke washing practice.

Ignitability.—This is a most important factor in coke for domestic use and in it moisture plays an important part, since a coke with a high moisture content is very difficult to ignite. The volatile content, also, affects the ignitability, although recent tests at Liverpool[4] indicate that this is less marked than was previously assumed. There is no doubt, however, that over-baking of the coke, giving an excessively low volatile content, *inter alia*, affects the ignitability.

Radiation Properties.—Gas coke holds a great advantage over its competitors in this respect, and results obtained at Liverpool[5] substantiate this claim. In these tests, "Dryco"—the dry-cooled coke produced by the Liverpool Gas Company—was compared with a well-known low-

[1] Inst. Gas E. Transactions, 1933-34. Comm. No. 80.

[2] F. Firth, Inst. Gas E. Transactions, 1933-34. Comm. No. 80.

[3] H. Singleton, Junior Gas Assocs. Transactions, 1933-34.

[4] R. E. Gibson, Nat. Smoke Abatement Soc., 1931.

[5] J. J. Brown, Junior Gas Assocs. Transactions, 1929-30.

temperature fuel, "K," and a good domestic coal, as follows:

—	Gas Required to Light in Cu.Ft.	Average Radiation Test Period.	% Ash and Fuel Remaining.
"Dryco"	4	93·5	10·2
"K"	3	81·1	9·9
Coal	2	66·1	11·7

The approximate composition of the "Dryco" was:

	%
Moisture	1·7
Volatile	2·0
Ash	7·8

The low-temperature fuel contained as much as 11·79% volatile matter.

The "Dryco," although using slightly more gas for ignition than the other fuels, was easily kindled with wood and paper.

Generally speaking, the radiant efficiency of open coal fires lies between 17·5% and 25%, while gas coke gives an intermediate figure of about 24½%. Weight for weight, dry coke gives 4%-5% more radiation than coal, but as the moisture content of the coke increases the radiant efficiency decreases, and for moisture contents greater than 10% coke gives less radiation than an equal weight of coal. Comparisons of the quality of the heat emitted from solid fuel fires show that the percentage of short infra-red energy given out from coke fires is greater than that from coal fires, due to the coke fire being hotter and more evenly heated owing to the smaller size of the coke fuel. It is thus seen that properly prepared gas coke holds great advantages so far as radiation properties are concerned.

Good Appearance and Physical Strength are very necessary for successful marketing. A coke with a bright lustre is infinitely more attractive to the consumer and creates a very favourable impression. In this respect dry-cooled coke holds an immense advantage. Physical strength is necessary so that excessive quantities of breeze are not formed in the cutting and grading process, and also in delivery to the consumer. Toward this end, careful blending is necessary during manufacture, and again the dry cooling process is claimed not to weaken the coke to such an extent as wet quenching.

Grading.—Under normal working conditions with horizontal retorts, a "cut" coke is infinitely preferable for domestic purposes. This is due to its greater cleanliness and lower moisture content, compared with that derived by screening only. If, however, some method of dry quenching were adopted and a low ash content coal used in the carbonization process, the necessity for cutting would be largely obviated.

Bulk Density.—Provided that other qualities are correct, a coke of high bulk density is desirable, such allowing a maximum of fuel to be charged to, say, a coke or fire boiler. The property of bulk density, however, is intimately connected with that of reactivity and ease of ignition, and, generally speaking, cokes of low bulk density give superior results in the open grate, both in ignition and radiation performance. Cokes produced by static carbonization methods tend to be of high bulk density, but it is possible to modify such properties.

A comparison of the bulk densities of graded coke produced by different carbonization methods is as follows[6]:

Class of Carbonization.	Weight in Lb. per Cu.Ft. of Graded Coke above 2 in. on a Dry Basis.
Coke oven	27
Intermittent vertical chamber	26
Horizontal retort	26
Continuous vertical retort	18 to 22

A method which would seem to have possibilities in the "density grading" of coke is the "pneumatic cleaning" method used by the Gas Light and Coke Company.[7] Although the primary function of this system is the elimination of bats, the principle upon which the plant works, dependent upon the specific gravity of the product, enables it to effect separation between light porous coke and denser coke of lower porosity. An example of a three products separation carried out on coke from vertical retorts is as follows:

Product.	Apparent Density.	Porosity, %.	Ash, %.
Light coke	0·82	56	5·3
Dense coke	0·91	51	6·6
Refuse	1·76	26	73·3

[6] F. M. Birks, American Gas Assoc., "GAS JOURNAL," 8/11/33.

[7] C. W. H. Holmes, "GAS JOURNAL," 20/12/33.

From the foregoing remarks it will be seen that provided care is taken in the quality and blending of coal, the carbonization process, and in the quenching of the coke, a very satisfactory fuel, holding great possibilities in the domestic market, may be produced.

From the point of view of coke quality, the benefits of speeding up the carbonizing period are very great. The "baking" of the coked charge and consequent shrinkage, with fissuring and formation of excess breeze, are avoided, with the result that an increased yield of high quality coke is obtained.

The use of all-silica settings with high temperatures has materially raised the rate of carbonization in recent years, and modern developments in the heating of retort settings show promise of further possibilities.

Coal Blending.

The question of the blending of coals has been the subject of much investigation in the past, and is now an accepted practice in modern carbonization procedure. A point, however, which militates against its general adoption is that when true blending is practised, the coal must be crushed to ⅜ in. or below. As a result, the bulk density of the coal is reduced from approximately 55 lb. per cu.ft. to 45 lb. per cu.ft., the throughput of the plant being correspondingly affected. It has been found, however, that in many cases the rapid carbonization effect set up by such blending more than counterbalances this apparent loss of throughput. Experiments carried out at Ramsgate in 1927[8] in the blending of coking and non-coking coals in intermittent vertical retorts, resulted in the reduction of the carbonizing period by 33⅓% and the production of a high-temperature coke with a volatile content of 4% and extremely free-burning properties. In further tests the breeze below ¼ in. produced was added to the coal, amounting to approximately 5%, taking the place of non-coking coal and being returned to the retorts. Amounts up to 15%-20% of coke dust were so used, with no difficulty, provided that a sufficient amount of binder was present in the coal.

Ordinary mixing, as distinct from blending, is quite largely practised, and in many cases is quite successful. Under such conditions, as, for example, when two nut coals of equal sizes are mixed, there is no reduction in throughput. Although swelling properties are thus modified, it is doubtful whether the carbonizing period is correspondingly lessened as with true blending.

The effect of blending upon the distribution of ash in the coke should be noted. When grinding is practised, the result is to distribute the ash homogeneously throughout the coke mass, with the result that but little of it falls out on treatment after leaving the retort. Thus the coke sold has a relatively higher ash content, although it does not contain any objectionable bats.

Breeze and Coal Blending.

It has been shown that the blending of breeze with coal is a practical proposition under certain circumstances.[9] The main factors affecting its use are the ash content of the breeze, and the degree of grinding of the mixture. H. Hollings, M.Sc., states[10] that it is extremely doubtful whether coke breeze can be profitably so mixed, unless crushed below about ¼ in., several attempts at mixing with gas coal of normal size having failed owing to adverse effect upon the quality of the large coke.

The Advantages of Dry Quenched Coke.

The advantages claimed and proved for dry quenched coke are briefly as follows:

Zero moisture content.
Minimum breeze production.
High calorific value.
Good appearance and silent burning properties.

A point of interest also is that any breeze and smalls produced are of zero moisture content, as contrasted with normal wet quenching practice in which similar material, especially if derived from scalping screens, is usually waterlogged.

The advantages of this dry-cooled product are not confined necessarily to its domestic use. Its superior qualities cause for economy on the works in producer gas and water gas plants.

The Ideal Domestic Coke from Horizontal Settings.

An interesting comparison of cokes is shown in the following table. The figures and information relating to the

[8] J. Roberts, Inst. Fuel, "GAS JOURNAL," 18/3/31.

[9] J. Roberts, Inst. Fuel, "GAS JOURNAL," 18/3/31.

[10] Gas Engineers' and Managers' Proceedings, 1933.

different cokes tabulated are taken from the "Report on the Behaviour of Cokes in the Open Grate" of the General Research Committee of The Institution of Gas Engineers, 1933.

An item of particular interest is the low bulk density of the coke obtained from horizontal retorts by blending and dry-cooling, such a fuel being eminently suitable for use in the open grate. This method of modifying the density of horizontal retort coke opens up for it a wide market hitherto held exclusively by vertical retort coke.

—	Vol.	Moist.	Gas for Ignition of 12 Lb. Fuel in Vertical Fronted Grate.	1st Ignition Temp.	2nd Ignition Temp.	Ash.	Bulk Density Cu. Ft. per Ton.
	%	%	B.Th.U.	°C.	°C.	%	
Continuous vertical retorts (West Yorkshire coal)	1·6	2·1	4,800	480	435	6·0	105
Horizontal retorts (blended coal, dry cooled). . .	1·6	1·0	5 850	400	400	8·5	101
Horizontal retorts (12-hour charges)	0·5	1·7	8,550	475	505	8·2	88

Fuel Conservation on the Works.

A factor adding to the breeze disposal question is the now general use of coke cutting, screening, and debreezing plant, which has become so necessary in recent years with the increased demand for the smaller grades of coke.

The question arises as to the most effective and economic means of disposal of this surplus breeze, failing the more desirable alternative of lessening the production. Coke breeze may be taken as all material passing through ½-in. mesh.

Such material generally contains a relatively greater ash and moisture content than the coke from which it is derived. This is particularly noticeable where scalping is practised. The breeze produced from coke cutting alone, however, is generally of quality comparable with the original coke.

If coke breeze can be used on the works, releasing an equivalent amount of clean coke, the cost of any special plant required for such treatment would be offset to quite a considerable extent by increased coke sales.

The use of breeze and coke and breeze mixtures in water gas generators has so far met with little success, and the most suitable method of breeze disposal is that of producer gas manufacture. Many uses are available for producer gas including the heating of retort settings, coal gas dilution, and the augmentation of the output of waste heat boilers.

A number of methods are available for gasifying breeze in this way. If the amount of breeze is insufficient to deal with producer gas requirements it may be mixed with coke and used successfully in ordinary step grate producers. Results obtained at Wallasey[11] show that with external step grate producers of a grate area 20% greater than normal it is a practicable proposition to gasify mixtures containing a large percentage of breeze. Amounts of breeze up to 80% of the fuel charged to producers were used, but it should be noted that such breeze comprised all material passing 1-in. square mesh. The analysis of such breeze, however, gave 78·9% as below ⅜ in., while in the breeze-coke mixture as charged, the amount of such smalls was 67·1%.

Interesting results were obtained at the Fuel Research Station[12] when using a standby water gas plant to make producer gas. After successfully working this plant with coke fuel, utilizing an alternate "up and down" run, it was decided to experiment with the use of breeze alone. It was found possible to burn breeze, 55% of which passed through ¼ in., without any difficulty. Clinkering took place every 24 hours. This method would appear to have great possibilities in works where producer gas is required to any considerable extent for diluent purposes, &c.

Of late, the use of mechanical producers specially designed for breeze utilization has become a factor of importance. A notable example of such a plant is the Trefois type installed at Manchester.[13] Hitherto, such plants although quite widely used on the Continent, have had no general adoption in this country, but it appears that their possibilities are very great.

[11] F. A. Rhead, Junior Gas Assoc. Transactions, 1932-33.

[12] Fuel Research Board Report 1931-32.

[13] A. L. Holton and H. C. Applebee, Gas Engineers' and Managers' Proceedings, 1930.

Sales.

Generally speaking, the maxims applicable to the selling of gas apparatus and of gas itself apply equally well in the case of coke. By reason of its nature, however, certain modifications are necessary. A few points to be observed are as follows:

(1) *Canvassing.*—Every gas fitter, inspector, or salesman, or, for that matter, employee of the undertaking should be a coke salesman. The ignorance of the public regarding the availability and price of coke from the local undertaking is almost unbelievable. Where circumstances warrant, a full-time coke salesman should be employed, with technical knowledge, and capable of advising on both domestic and industrial questions.

(2) *Coke Grates.*—The greatest field open to potential coke sales is that of the open fire. Consequently, every effort should be made to sell coke-burning grates.

(3) *Deliveries.*—Prompt delivery of coke orders is an important selling point, in that it gains the goodwill of the consumer. Wherever possible, orders should be executed on the same day and regular weekly orders should be encouraged. There is sometimes a tendency to neglect small orders, leaving such to local merchants, but provided a sufficient margin is allowed to make such orders remunerative there is no reason why orders of under 5 cwt. should not be supplied by the gas undertaking itself.

(4) *Free Samples.*—Periodical delivery of sample 7-lb. or 14-lb. bags of coke is a useful method of stimulating sales. It should be realized that an appreciable proportion of gas consumers never enter the local showrooms and thus have no opportunity of coming into contact with the sales side. This applies, of course, to the selling of gas apparatus also and the only method of approach in such cases is by canvassing.

Discussion.

Mr. C. B. Felton (Newport) asked whether a cut coke with sharp edges gave as easy an air passage as crushed coke with rounded edges.

Mr. H. Maycock (Engineer, Manager, and Secretary of the Abertillery Gas Department) said that in his experience he had found that the fitting of firebricks into ordinary iron sided coal grates greatly increased the radiation when burning coke, the conversion being quite a simple matter. With reference to gas ignition of coke grates he had found that the igniting of two such grates used approximately 1,000 cu.ft. per quarter. Referring to the question of breeze, he had found that a very suitable grade for fish-frying ranges was that of ⅜ in., whereas the Author had given a figure of below ½ in. as breeze for works purposes.

Mr. D. W. Rees (Neath) stated that at Neath they mixed breeze with coke for use in the producers to the extent of about 20%, and as a result had no breeze available for disposal on the district.

Mr. Tavener (Cardiff) stated that at Cardiff they had found it necessary to make special coke for shipment to Norway, such being of low bulk density from vertical retorts. He had found coke a useful method of getting gas into all-electric houses and thus paving the way for further apparatus.

Mr. B. J. Bell (Cardiff) mentioned the matter of moisture content, saying that good coke delivered dry from the works was sometimes unavoidably soaked outside. Referring to coke selling by all members of the undertaking he suggested that concentrated effort by experts in each department would be the more effective way.

Mr. Petersen, in replying to the discussion, said that Mr. Felton had raised the question of sharp edged coke *versus* round edged coke. He held no brief for finger coke, but thought that sharp edged coke was more desirable, tending to expose larger cavities and consequently attaining higher temperatures. Generally speaking, round edged coke was obtained in the old-fashioned drum screen and was attended by heavy breeze production. With modern cutting and screening plant this was absent.

In reply to Mr. Maycock, the Author said he had found the fitting of firebricks in his own grate was attended by great increase in radiation performance. He was interested to hear that a figure of as much as 1,000 cu.ft. was obtained for igniting two coke fires during a quarter. With regard to the question of the grade of coke used for fish frying his figure of ½ in. and under for breeze did not agree with Mr. Maycock's, but this was another argument for some universal definition of coke grades.

He was interested to know that when using coke and breeze in the producers there was no surplus breeze available on the works, but suggested that if full waste heat recovery was used on both coal gas and C.W.G. plants there would then be some breeze available. He suggested that the reason for the popularity of low bulk density coke in Scandinavia was that it was sold by bulk. This demand for low specific gravity coke emanated from the merchants and not from the consumers.

With regard to moisture content, his experience was that very dry coke absorbed less moisture in proportion when compared with partly moist coke.

THE ANNUAL MEETING OF

Feb. 7, 1936

The Gas Light and Coke Company

The Two Hundred and Twenty-Ninth Ordinary General Meeting of the Proprietors of the Gas Light and Coke Company was held on Friday, Feb. 7, at the Chief Office of the Company, Horseferry Road, Westminster, S.W.—Sir David Milne-Watson, LL.D., D.L. (the Governor), presiding.

The SECRETARY (Mr. W. L. Galbraith) read the notice convening the meeting, and the Corporate Seal of the Company was affixed to the Register of holders of Capital Stocks.

The GOVERNOR said: Ladies and Gentlemen,—Before proceeding to the business of the meeting, I know that you will all wish me to express our very deep regret at the death of King George V. I shall not attempt to add to the many eloquent and heartfelt expressions of grief that have been made, not only by our own countrymen, but also by leaders of every nation in the world. The keen personal interest of His late Majesty in all sides of the industrial life of this Country never flagged, and we were proud to recall that he honoured us by opening the coal-handling plant at Beckton in 1926.

It will also, I know, be your desire that I should express our deep sympathy for Her Majesty Queen Mary and for our new sovereign, who, as the Prince of Wales, has already won the affection as well as the loyalty of his subjects.

[Those present stood silently in their places.]

LOSSES BY DEATH.

I assume, ladies and gentlemen, that you will, according to our usual custom, take the Report and Accounts as read.

I much regret, at the outset, to have to refer to the losses by death we have sustained during the year. Mr. Thomas Goulden had been a Director of the Company for fourteen years, and had previously served it for thirty-eight years, eighteen of which were as Chief Engineer. We have lost in him a high authority on gas engineering and a good friend. He was largely responsible for modernizing the Company's works, and his sudden death was a sad loss to us all. The vacancy on the Board has been filled by the election of Mr. Thomas Hardie, who since 1922 has been Chief Engineer of the Company. Mr. Hardie has rendered very valuable services during his period as officer, and I am sure that his advice will be of great advantage in the Board Room.

Sir Walter Tapper had for many years been Consultant Architect to the Company, and his distinguished professional guidance was of the greatest value to us in the great expansion of modern showrooms which had marked the Company's progress since the war. No doubt many of you are aware that the beautiful showrooms downstairs, through which you may have passed on your way up to this meeting, are an example of Sir Walter Tapper's work. He was one of the leading architects of the day, and the showrooms and offices he designed for us are a memorial of which we have reason to be proud.

Mr. John A. Stoneham had been Auditor of the Company for nearly thirty years, and through that long period had watched most conscientiously the interests of the shareholders. Mr. Edward Woolley had been Registrar to the Company for the last five years, and had entered the Company's service in 1893. His loss is deeply regretted by all his colleagues.

THE CAPITAL ACCOUNT.

Coming now to the record of the Company during the past year, I will ask you to turn first to the Capital Account. You will see that we have spent altogether £1,362,000. This is a very much larger amount than has been spent in recent years. The principal items are mains and service pipes £290,000, meters £67,000, and appliances £676,000. With regard to mains and service pipes, these have to be laid to meet the growing requirements in those parts of our large district that are not fully developed. The meters are modern and of compact design to take the place of the old and more bulky types, and the appliances are similarly in replacement of older patterns. Against the capital expenditure of £1,362,000 we have written off £89,500, of which £203,000 represents meters, and £367,000 appliances.

Taking advantage of the favourable position which existed in the money market, the Company issued in the month of February, 1935, £2,500,000 3% irredeemable Consolidated Debenture Stock, for which we received the very satisfactory price of 93¼. This money has been used for development purposes, some details of which I have just given you, and for the repayment of the bank loan. Additional investments on behalf of the Pension Fund have also been made, and a large sum is involved in the financing of hire-purchase business.

INCREASED OUTPUT OF GAS.

Turning now to the Revenue Account, I am much pleased to be able to report that our output of gas in 1935 rose by 1·1%. Now, although 1·1% may not sound very much, yet it does, in fact, represent a huge amount of gas—namely, no less than 515,091,600 cu.ft. Expressed in terms of heat energy, this is equal to 75 million units of electricity, and there are few suppliers of electricity in our area who reached that total for their whole annual output—not merely their increase. This is all the more impressive when we consider that the new gas appliances are displacing older models at an unprecedented rate, and that these new models are much more economical in gas consumption. The latest fires, for instance, of which I shall say more in a moment, give no less than 30% more heat for the same gas consumption as the old types they are replacing. Another factor that makes our increase particularly satisfactory is that it has been achieved in the fierce competition which we are having to meet in every direction. It does seem to show that the modern methods adopted by the Company for selling gas have been thoroughly justified, and that the public have ever-growing confidence in gas as a heating medium.

During the year the Company have reduced the price of gas in certain differential price areas, in anticipation of the reductions that would have been made in future years in accordance with the Company's various Acts.

With regard to the other items in the Revenue Account, the rental of appliances shows an increase of some £60,000, and coke shows an increase of over £100,000. Shareholders will further note with satisfaction that the income from ammoniacal liquor and sulphate of ammonia, on which there was at one time a loss, and which showed only a small profit in 1934, has now reached the substantial sum of £20,000.

On the debit side of the account, purification is up by £12,000; repair and maintenance of works and plant, by £150,000; repair and maintenance of mains and service pipes, by £100,000. Repair and renewal of meters shows a decrease, largely because we are buying new meters, and are therefore not called upon to spend so much money on repairs. Under public lighting the increase in repairs is really a satisfactory figure, as it means that there are more lamps to be repaired.

COAL SITUATION.

I now come to a point to which your Directors have had to give very serious consideration. During the last few months of 1935, the country was under the cloud of a threatened coal strike, which was only called off a fortnight ago. Nobody can possibly imagine that the settlement of the recent crisis constitutes a solution of the extremely difficult coal question. Peace has been secured in the industry, however, for the present, and that is a matter for profound thankfulness. [Applause.] It would have been the greatest disaster if we had been plunged into a coal strike at the present moment, when the country is making further substantial progress. No one who went through the 1926 strike, and knows what happened then, could have any other feelings than those of dismay at the thought of another strike of that kind occurring. The damage it did to the coal trade of this country was immense. Indeed, that trade has never

recovered, and markets that had been ours for years were completely lost, never to be regained.

The recent threatened strike was averted by an appeal to users of coal in this country to increase voluntarily the price paid under their contracts. The proposals originally put forward were eminently unfair to the public utilities. At one time it was suggested that they should increase contract prices by a much larger sum than other users of coal. However, saner counsels prevailed, and ultimately we were asked to pay, in company with other industries, 1s. per ton extra on our contracts. Of course, it is contrary to every sound business rule that contract prices should be increased. It was only knowing that the Government urged this course, and that they were supported by the desire of the public, expressed at the General Election, to see miners' wages raised, that this voluntary increase on contract prices was agreed to.

The Directors of this Company felt that they could not stand aside, and they have therefore undertaken to pay 1s. per ton extra on all their coal contracts. This involves a very serious increase in the cost of coal, our principal raw material—we use 3,000,000 tons a year—and we have no alternative but to ask the public whom we supply to pay something extra for their gas. But we wish to make as little difference as is consistent with the economic running of our business, and we have decided that we can meet the new charge by raising the price of gas by 0·1d., or one-tenth of a penny per therm. That is to say, customers who have been charged 8·6d. a therm will pay 8·7d., and so on. The difference this will make to individual accounts is very slight. An ordinary customer who pays (say) £3 a quarter at 8·6d. will only pay 8d. extra when the price is at 8·7d.; and an automatic customer from whose meter 15s. is at present collected at the price of 10·6d., will only pay 2d. extra when the price is 10·7d. I am sure that people in our area will see the justice of being asked to take this comparatively slight share in helping the miners in the distressed areas in the North-East of England. [" Hear, hear."]

As I have said, this extra price cannot be looked upon as a permanent settlement. While it is very welcome that peace has been secured for the present, there is no getting away from the fact that the Government must at an early date deal with the question of coal mining as a whole. Those of you who have read " The Times " this morning will have seen that very clearly stated in their leading article on the coal position. Part I. of the Coal Mines Act of 1930 is at the root of the trouble. Under that Act, collieries, whether they are efficient or inefficient, are allotted quotas. The result is that the average cost of winning coal in this country is higher than it ought to be. There is no other industry that I know of in this country where encouragement is given by Statute to the continued existence of inefficient and unprofitable works. The example of the shipbuilding, cotton, and other industries ought to be followed, and the inefficient pits should be shut down. The production of coal should be concentrated in the most efficient and low-cost pits, so that the price of coal might be reduced. Cheap fuel is essential to the industrial prosperity of the country. It is for Parliament to devise ways and means for dealing with the men unfortunately displaced in closing down inefficient pits. There cannot be one law of economics for the rest of the world, and another for the coal industry.

There is another aspect of the coal question which is highly disturbing, and that is the avowed policy of the Government to set up, by means of coal selling boards, an unregulated and uncontrolled monopoly. It has been a feature of legislation in this country for centuries that, where monopolies are introduced, safeguards are devised for the protection of the community. To-day in the coal industry no such safeguards are provided, and the only course open to the consumer is to appeal to a Committee which, generally speaking, has neither executive nor judicial powers. Your Board strongly holds the view that it is the duty of Parliament to ensure that coal consumers should be protected, and I hope that the Government, in its new term of office, will take up this matter and deal with it. [" Hear, hear."]

Results of the Year's Working.

I think there are no other items calling for special attention in the accounts. The result of the working of the year is as follows: The balance transferred from the Revenue Account to the Profit and Loss Account is £2,071,000, as against £2,026,000 for the previous year. This balance, after adding the sum of £19,000 received from H.M. Treasury under the Development Act, 1929, and after allowing for interest on borrowed money for the year and dividends distributed in respect of the June half-year, leaves a sum of £897,000 out of which to pay dividends for the December half-year. This sum enables the Directors to recommend the usual dividends on the 4% Consolidated Preference Stock, the 3½% Maximum Stock, and a dividend (unchanged) at the rate of £5 12s.% per annum on the Ordinary Stock.

The payment of these dividends, together with the necessary contribution of £20,000 to the Redemption Fund in respect of the half-year ended December, will absorb £695,000, leaving £203,000 to be carried forward to the credit of the current year's account as against £183,000 carried forward on the last occasion.

Bills in Parliament.

The recent issue of the two-and-a-half million Debenture Stock to which I have already referred, leaves us with our statutory capital powers almost exhausted. We have therefore deposited a Bill in Parliament to ask for powers to create additional share capital of £3,000,000.

The Company are also promoting a Bill to ensure that tenants in council houses and flats shall really be given freedom of choice as between gas and electricity. You will remember that under the Gas Light and Coke Company's Act of 1933 every tenant has the right to decide for himself whether he will use gas or electricity or both in his home. This right was extended from the Company's area to the whole country by the Gas Undertakings Act of 1934. You may, therefore, wonder why we are finding it necessary to go to Parliament again on this question. It is happily true to say that the local authorities in our area of supply are, with a very few exceptions, giving their tenants the freedom which Parliament intended. There are, however, some who, owning their own electricity undertakings, are putting serious obstacles in the way of our providing a gas supply. As you will readily understand, there cannot be real freedom of choice in practice unless the local authority allows us to put in the necessary pipes when council buildings are being erected. If the buildings go up with only electric wires in them, those tenants who prefer gas are clearly placed at a great disadvantage. The object of the new Bill is simply to enable us to put in our pipes—at, I should here emphasize, our own expense—when the buildings are in progress. No fair-minded person can deny that this is an obvious and sensible course to follow. As I have said, the municipalities who object to it are the exception to the general rule of good relations which prevail between ourselves and the London County Council and other great municipal authorities in our area. There is, I think, nothing more that I need say on this subject, except that the new Bill will only apply to the local authorities who own their own electricity undertakings.

First Gas-Works in the Country.

The works are being kept up to date and in good condition—in particular, the works at Southend are being reconstructed. It will interest shareholders to know that, owing to our improved method of distribution, we have been able to dispense with the two gasholders here at Westminster. These gasholders were about 50 years old, and since they occupied very valuable land we decided that it was no longer necessary to keep them here. This is the last of this old gas manufacturing station, which, as you are probably aware, was the original site of the Chartered Gas Light and Coke Company's Works, gas being made here in 1812—the first gas-works in the country. We ceased to manufacture gas at this station in 1870, but we have stored gas here since that time.

A Most Encouraging Year.

We have never, as I think you will agree when you have considered the facts and figures I am about to put before you, enjoyed a more encouraging year, nor one more indicative of the great and progressive nature of our business. That business is now, as you know, many-sided. We serve the newest flats no less than the older houses, and as factories spread in our area with the new southward trend of industry, we are finding more and more uses for gas for purposes which only a year or two ago were unknown. On the traditional side of our business, we are showing a satisfactory expansion in street lighting. The position in the private houses and flats we serve has also changed and changed for the better. We have been accustomed to provide the average Londoner for the last generation with his heat for cooking and room-warming. More recently we have played a growing part in serving him with hot water. The strength of our hold on this great domestic demand for heat on tap has been very strikingly illustrated in 1935 by the remarkable change-over of gas apparatus. There has been an increase in the number of those appliances, and that is, of course, a sign of progress to which the greatest weight must be attached. But quite apart from such increase, there has been a turn-over from older types of appliances to more modern ones with improved appearance and greater efficiency. Our public is, we believe, coming to regard a periodic visit to gas showrooms as a necessary step if they are to keep their homes up-to-date. There was undoubtedly in the past a tendency to install (say) a cooker, and to leave it in service long after more satisfactory models had been put on the market. That these old-style appliances worked for so long is a great tribute to the thoroughness with which they were designed and made. But invention does not stand still in gas appliances any more than, for in-

stance, in motor cars, and it is for this reason that we may congratulate ourselves upon the great quickening of public interest in our latest models.

Huge Output of Appliances.

We have aimed at giving the public the benefit of the latest inventions in gas cooking and heating appliances. We supplied in 1935 603,353 new appliances, of which 364,289 were new cookers, 151,137 fires, radiators, and portable heaters, and 66,078 were water heaters. To those who are interested in statistics, this actually means that we have been installing new gas appliances at the rate of more than one a minute throughout the whole of 1935. [Applause.] A smaller, but no less improved, item in this total was refrigerators, which reached 9,462. When you remember that refrigeration is still in its infancy in this country, you will appreciate the extremely encouraging nature of the response that we received to our first campaign to make "Electrolux" gas refrigerators popular. No other effort to sell refrigerators of any kind in this country can challenge our 1935 record. There is one other point I should like to make in connection with these figures of sales of appliances. We have in 1935 taken out 92,000 old-fashioned cookers from automatic consumers and replaced them by a new cooker designed at Watson House. The meaning of this is that the poorer classes in our area are now rapidly being provided with modern thermostatically controlled enamel cookers, and the difference that this makes to the life of a busy housewife does not need to be stressed.

It has been our policy to offer many of our appliances on easy hire-purchase terms rather than merely on hire, and the public response to this is further evidence of confidence in the future of gas. Our sales, including hire-purchase, of gas appliances in 1935 were £1,901,274—an increase of three-quarters-of-a-million pounds on the previous year. Our revenue from the hire of appliances, I am glad to say, did not show any falling off, as it rose from £685,113 in 1934 to £742,861 in 1935.

Such a turnover of appliances has put a great strain on all departments, and we have been working, in consequence, at high pressure throughout the past year. We had grown accustomed to finding a rush of business in the weeks before Christmas gradually falling away into a slack summer period. The difficulty of keeping labour regularly employed under such conditions was considerable. We had no slack summer period in 1935, and we may, I think, confidently look forward to being able to keep up employment again in the coming summer.

There has been an increase of 37,342 in our number of consumers, making a total of 1,328,653. The number of meters in use is considerably in excess of this figure. We have laid 201 miles of new mains, bringing our total length of mains to 5,776 miles.

New Public Lighting Contracts.

There has again been an increase in the number of street lamps, which have risen from 48,748 in 1934 to 51,447 in 1935. This is a notable feature of the accounts. We have been successful in obtaining in the course of the year two public lighting contracts for 15 years; seven contracts for 10 years; and seven for periods of 7 or 5 years. These contracts include that with the Harrow Urban District Council for replacing 1,200 electric lamps in main, and other roads by gas. They also include a conversion from electricity on a small scale at Brentwood. Within the last four years modern gas-lamps have been installed in 50 miles of main roads in our area. We lost in 1935 the part of Lambeth in our area and the main roads in Richmond.

Record Coke Sales.

Coke is becoming more and more popular as a smokeless labour-saving fuel for open fires and for hot water and central heating. Coke sales for 1935 reached the record figure of 1,575,437 tons, which is 122,822 tons more than the previous year. In consequence partly of this addition to our coke business, but more of the greater activity in the use and replacement of appliances, our Transport Department has had an exceptionally busy year. Indeed, I do not think I can give you a more vivid picture of how our business is progressing than to give you an outline of the growth of our transport.

Nearly 6,000,000 miles were covered by our vehicles in 1935, which is an increase of over 1,000,000 miles on the 1934 figure, and this, you will remember, is almost entirely in respect of journeys made in and round London. We delivered on an average 1,000 tons of coke a day, including 4,500 deliveries on the 20th of December. I may, perhaps, add that we sometimes permit ourselves to dream in our lighter moments of some future day when our customers will remember to order their coke well in advance, so that we could space out deliveries instead of having a rush of urgent telephone orders whenever there is a cold spell. No doubt before that dream comes true, our area will have had to be extended from London to Utopia. [Laughter.]

The added mileage has not lowered the record of our drivers, 377 of whom qualified for the awards of the London Safety First Council, and two of our drivers who had completed 15 years without an accident were presented with special awards by the Lord Mayor of London at Guildhall. [Applause.]

We are always experimenting with newer types of vehicles, and have had encouraging results in the year under review with seven new lorries with moving floors which unload over a ton a minute. At the same time, we are still satisfied with the usefulness of our old friend the horse for short hauls, and kept in 1935 a stud of 93—and, I may add, won 70 prizes at Horse Shows.

Showrooms and Technical Work.

Four new showrooms were opened—Pinner, South Harrow, Ruislip, and Canvey Island—and a temporary showroom at Ilford. Plans have been prepared and work begun on nine other showrooms. The policy of using mobile showrooms was continued in the outlying areas, 61,206 miles being covered. We fitted up 536 show houses and flats in co-operation with estate agents and builders, and took part in 28 Exhibitions. Over thirteen hundred cookery demonstrations were given.

The technical work at Watson House continues to expand. Over 500 new appliances and fittings were tested during the year in the laboratories, which maintained the closest touch with the manufacturers of gas-burning equipment. The laboratories have been specially occupied during the past year with new developments in water heating by gas. The fittings and appliances which we buy for supply to the public continue to be submitted to stringent tests, and our increased business is reflected by a 25% increased throughput in the Testing Section. The development of new gas appliances and new gas technique requires from us a continued effort to keep our large body of district personnel and fitters up-to-date. This is done by training courses at Watson House and by the distribution in various forms of technical information to all our district personnel. Last year over three times as many men passed through courses of training at Watson House as compared with the previous year. Staff courses were also initiated, many demonstrations were held, and a record number of calls were put through the Information Bureau.

We now have over 19,000 factories using gas for technical processes in our area. Our Industrial Appliances Workshop continues to do good service, co-operating closely with the manufacturers and supplying in 1935 appliances seven times the value of ten years ago. Our research staff has again had an active year, and the policy of keeping in close touch with technical developments on the Continent and in America has been pursued with encouraging results. Co-operation between our engineers and chemists is responsible for the very high level of efficiency which we may now fairly claim for the process of gas manufacture.

Technical improvements on the coke side of our business have been a marked feature of 1935. There has been an advance in the efficiency and the appearance of open fires specially designed to burn coke. Methods of automatic stoking, &c., for coke central heating plant have also been improved.

While ready to spend where we felt that the outlay would be justified by results, we have at the same time considered all practical economies. As a result of standardization of materials, important results have been achieved in this direction. The purchases made by our Store Department are naturally most varied—indeed, they go from pins to motor lorries. We have been able to reduce the number of lubricating oils, to give an example, from 150 to 14, and the number of varieties of brooms and brushes from 218 to 98. No one who has any experience of administering a large undertaking will regard these examples as insignificant.

Two-Part Tariff.

One of the most important changes we have made in the course of the year is the new two-part domestic tariff. As you are aware, we have for some years had a system of block charges in force for industrial and other large-scale consumers. On October 1 we introduced an alternative charge available for all domestic consumers, ordinary or automatic, by which, if they agree to pay a standing charge based on their rateable value and the number of rooms in their premises, they would be charged at approximately half-price for every therm of gas used. This means that, in the case of ordinary consumers in our main area, gas costs only 4d. per therm after the standing charge has been paid, and at this rate it makes such a relatively big operation as central heating economic. We have every reason to be hopeful of the success of this new two-part tariff. The hot water campaign, which some of you may have noticed opened in the newspapers yesterday, will, we believe, be the means of intro-

ducing many thousands of our consumers to this new and more economical way of using gas.

New Chief Engineer.

The Directors have appointed Mr. R. W. Hunter as Chief Engineer to succeed Mr. Hardie. Mr. Hunter has been in the service of the Company for 34 years, and knows all the various works. I feel sure that he will fill this most important post successfully.

I am very glad to say that the staff have worked with loyalty and efficiency. Co-partnership, as heretofore, has been a leaven and a working force in the Company. [Applause.]

With this I formally beg leave to move:

> That this Meeting do agree with and confirm the Report of the Directors and the Auditors' Report and Statement of the Accounts of the Company for the year ending Dec. 31, 1935.

Before putting the resolution to the meeting, I shall be happy to hear any remarks which proprietors may wish to make, and to endeavour to answer any questions they may ask.

The Deputy-Governor (Mr. Henry Woodall, M.Inst.C.E.) formally seconded the resolution, which was carried unanimously.

The Governor then called upon the Secretary to read the Minute of the Court of Directors recommending dividends for the past half-year.

The Secretary read the Directors' minute, dated Jan. 24, 1936, as follows:

> Resolved.—That it be recommended to the Ordinary General Meeting of Proprietors to be held on the 7th proximo that (1) dividends as follow for the half-year ending the 31st December, 1935, be declared, viz.:

	£	s.	d.	
On the 4% Consolidated Preference Stock at the rate of	4	0	0	per cent. per annum.
On the 3½% Maximum Stock at the rate of	3	10	0	,, ,,
On the Ordinary Stock at the rate of	5	12	0	,, ,,

All subject to deduction of income-tax.

> (2) In accordance with the provisions of Part III. of the Company's Act, 1931, the sum of £20,000 be set aside towards the Redemption Fund.

The Governor: I beg leave to move the adoption of that recommendation.

The Deputy-Governor seconded the resolution, which was unanimously agreed to.

Election of Directors and Auditors.

The Governor: Three Directors (Mr. Robert Martin Holland-Martin, Mr. Courtenay Cracroft Spurrell Fooks, and Mr. Thomas Hardie) retire by rotation at this meeting, and offer themselves for re-election. I beg leave to move that Mr. Robert Martin Holland-Martin be re-elected a Director of the Company. Mr. Holland-Martin has added to his responsibilities by becoming Chairman of the Southern Railway Company, and therefore his advice and experience, which were always valuable to us, are now even more so.

The Deputy-Governor seconded the motion, which was agreed to.

The Governor: I beg leave to move that Mr. Courtenay Cracroft Spurrell Fooks be re-elected a Director of the Company.

The Deputy-Governor seconded this, and it was agreed to.

The Governor: I beg leave to move that Mr. Thomas Hardie be re-elected a Director of the Company.

The Deputy-Governor seconded the motion, which was carried.

Mr. W. B. Reidie proposed, Mr. H. Dodimead seconded, and it was agreed, that Mr. Percy Howard Ashworth be re-elected an Auditor of the Company.

The Governor: As it is necessary to appoint an Auditor in the place of the late Mr. J. A. Stoneham, I will ask one of the proprietors to move the necessary resolution.

Mr. Reidie proposed, and Mr. Arthur Boulton seconded, that Mr. Herbert Edward Ibbs, a duly qualified stockholder, be elected an Auditor of the Company in place of Mr. John Allen Stoneham, deceased. This was unanimously agreed to.

Vote of Thanks.

Mr. F. Locket, in proposing a very cordial vote of thanks to the Governor, Directors, Officers, and all employees of the Company, brought in also the Captains, Officers, and men engaged on the Company's colliers. The Proprietors would agree that it was very encouraging to have heard such a cheerful report. He had been associated with the Company for more than forty years and he knew the troubles and vicissitudes through which it had passed—particularly during the last ten or twelve years because of the keen competition to which it had been subjected. The Governor's speech was full of power and afforded certain proof that he was leading the Company on to still further achievements. He sometimes wondered how the Company maintained such striking progress in spite of difficulties. He ventured to suggest that it was the human touch which pervaded all ranks of employees. The Directors might formulate policies, but without this human touch these policies would not come to such abundant fruition in the way they should do. The Company had Co-Partnership and Pension Schemes which, when the time came for their employees to retire, would enable them to remain well provided for. This was a definite and successful incentive to all employees. Often such votes of thanks, he added, were a matter of form, but he wished to make it quite clear that the Proprietors were deeply grateful for the energetic and successful way in which this huge Company had progressed in the past year.

Mr. H. Rayner seconded the vote, which was carried unanimously with applause.

The Governor: On behalf of my colleagues, myself, the staff, and all the employees, I should like to thank Mr. Locket, Mr. Rayner, and you, ladies and gentlemen, for the very hearty manner in which this vote has been accorded. It is a very great encouragement to them to receive the congratulations of the Proprietors. We have had a strenuous year, but we are full of fight, and hope to give a good account of ourselves when next we meet you.

WHARNCLIFFE MEETING.

The Governor called upon the Secretary to read the Notice convening an Extraordinary Meeting, and the Secretary, having read the Notice accordingly, the Governor declared the Meeting to be an Extraordinary Meeting.

The Governor: I have explained to you the reasons for promoting these two Bills in Parliament. In regard to Bill No. 1, the additional Capital of £3,000,000 is required for the purpose of further development, including extension of mains and our hire-purchase business.

The Secretary then read the heads of Bill No. 1 which provided that the capital may be issued in the form of Ordinary or Preference Stock.

The Governor: I have much pleasure in moving:

> That the Bill No. 1 now submitted intituled "A Bill to empower the Gas Light and Coke Company to raise additional capital; and for other purposes" be and the same is hereby approved subject to such alterations as may be made in the Bill by Parliament and approved of by the Directors.

The Deputy-Governor seconded the proposition which was carried unanimously.

The Governor: In regard to Bill No. 2, I have already explained that the necessity for this is that certain local authorities owning electrical undertakings have put serious obstacles in the way of the Company providing a gas supply to Council buildings towards the cost of the erection of which the Company contributes by way of rates.

The Secretary read the heads of Bill No. 2, which is to enable the Company to require reasonable facilities to be afforded for the installation of gas pipes, &c., in buildings during the process of erection in the Company's limits of supply by such local authorities as are for the time being carrying on electricity undertakings.

The Governor: I have much pleasure in moving:

> That the Bill No. 2 now submitted intituled "A Bill to confer upon the Gas Light and Coke Company powers with reference to the making of provision for supplies of gas in certain cases; and for other purposes" be and the same is hereby approved, subject to such alterations as may be made in the Bill by Parliament and approved of by the Directors.

The Deputy-Governor seconded the resolution, which was carried unanimously and the proceedings then terminated.

Gas Undertakings' Results

Cardiff.

The report of the Directors of the Cardiff Gas Light and Coke Company for the year ended Dec. 31, 1935, states that an interim dividend to June 30 last having been paid on the consolidated ordinary stock at the rate of 6% per annum, and on the preference stock at the rate of 4½% per annum, the Directors recommend payment on March 31 of a final dividend for the year on these stocks at the same rates, less income-tax. In view of the additional shilling per ton for all coal covered by existing contracts, steps will be taken to notify consumers in due course of the increase in prices that may have to be charged for gas in consequence.

Ipswich.

The report of the Directors of the Ipswich Gas Light Company for the year ended Dec. 31, 1935, states that after payment of the interim dividend at the rate of £6 10s.% per annum, and providing for interest and other charges, there is an available balance of £31,383. The Directors recommend the payment of the following dividends in respect of the December half-year—viz., at the rate of £6 10s.% per annum on the consolidated stock; and at the rate of £5% per annum on the 5% preference stock, which will absorb the sum of £7,672, leaving a balance to carry forward of £23,711. During the year the Directors redeemed the £9,700 5½% debenture stock. There was an increase of over 8 million cu.ft. in the quantity of gas sold during the year.

Littleborough.

A half-yearly meeting of the Littleborough Gas Company was held on Feb. 6, when Mr. C. R. Barnes presided in the absence of Sir Alfred Law, M.P. The statement of accounts showed that the receipts from the sale of gas during the past six months amounted to £7,477 compared with £7,805 for the corresponding period of last year. There was a revenue profit of £1,340 compared with £1,274, and the balance available for dividend was £1,191 against £1,273. The accounts were approved and the usual dividend was sanctioned.

Malton.

The Directors' Report on the Malton Gas Company for the half-year ended Dec. 31, 1935, shows that the balance of profit is £1,906 compared with £1,923, for the corresponding period of 1934. This slight reduction is due to extra expenditure incurred in the works. The consumption of gas was higher, the receipts from this source being £6,019, against £5,983 twelve months ago. On the two days preceding Christmas the consumption was a record. The receipts from coke and tar were lower, but gas fittings' receipts have increased considerably. With the balance of £5,943 brought forward from the last accounts there is a balance, after paying income-tax, of £7,604. The Directors recommend the payment of a dividend of 6½% free of income-tax, which will absorb £1,560, and leave £6,044 to be carried forward to the next accounts.

Newmarket.

The report of the Directors of the Newmarket Gas Company states that for the year ended Dec. 31, 1935, the balance brought forward from last year was £9,971, less debenture interest paid for the year 1935, £163, leaving £9,808. The profit earned during the year was £4,194, making a balance at the credit of profit and loss account of £14,002. The Directors recommend that out of this amount a dividend be paid at the rate of 8¾% for the year 1935 upon the £65,000 original consolidated stock of the Company, less income-tax, at 4s. 6d. in the £, £4,408, leaving to be carried to next year's account £9,595.

Newport (Mon.) (Severn Valley).

The report of the Directors of the Newport (Mon.) Gas Company for the year ended Dec. 31, 1935, states that an interim dividend at the statutory rate of £5% per annum on the consolidated stock of the Company, for the half-year ended June 30, 1935, having been paid, it is recommended that a final dividend at the same rate be declared for the half-year ended Dec. 31, 1935. The former Directors of the Company having resigned, the following were elected in their stead: Major Julian Day, M.C., Chairman, Mr. Sidney Geo. Wood, Deputy-Chairman, Messrs. R. Wilson Bartlett, J.P., F.S.A.A., Geoffrey Murton Gill, M.I.Mech.E., M.Inst.Gas E., and Charles O. Lloyd. It is proposed to revert to a Board of six members, and a resolution will be submitted at the annual ordinary meeting electing a new Director.

Perth (Australia).

The annual report of the Gas Department at Perth (Australia) states that the quantities of gas manufactured and sold were as follows: Gas manufactured in 1934 was 343,266,000 cu.ft.; in 1935, 373,781,000 cu.ft., an increase of 8·8%; gas sold in 1934 was 309,497,200 cu.ft.; in 1935, 336,039,782 cu.ft., and increase of 8·5%. The average quantity of gas made per ton of coal was 17,222 cu.ft.; as against 17,410 cu.ft. The heating value of the gas supplied was 482 B.Th.U. The declared standard is 478 B.Th.U. The maximum output of gas in 24 hours for the year was 1,215,000 cu.ft. on June 22, 1935; as against 1,154,000 cu.ft. on July 26, 1934, and 1,158,000 cu.ft. on July 16, 1930. The number of meters increased from 18,938 to 20,420; or 1,482 for the year. The mains laid during the year totalled 25,556 yd. The total length of mains laid to date is 605,551 yd., or 344·063 miles.

Pudsey.

The Report of the Directors of the Pudsey Gas Company and statement of accounts for the year ended Dec. 31, 1935, state that the sales of gas show an increase of 1·91% when compared with the previous year. The balance of net profit, after deducting the interim dividend at the rate of 9% per annum, paid on Aug. 1 last, amounts to the sum of £14,372, from which the Directors recommend the Proprietors to declare a dividend for the past half-year at the rate of 9% per annum.

Ramsbottom.

The Ramsbottom (Lancs.) Gas Company's half-yearly general meeting was held on Feb. 5, when dividends of 10% on the original shares and 7% on the red scrip shares were declared.

Reading.

The report of the Directors of the Reading Gas Company states that, following the record year 1934, the sales of gas, residuals, and all descriptions of gas appliances show satisfactory increases. A contract has been entered into with the Corporation of Reading for the street lighting of a large part of the Borough for a period of seven years. Interim dividends at the statutory rates for the six months ended June 30, 1935, were paid on Sept. 1, 1935, and the Directors now recommend that dividends at similar rates for the half-year ended Dec. 31, 1935, be paid on March 2 next, less income-tax.

Shanklin and Ventnor.

The report of the Directors of the Shanklin and Ventnor Gas Company for the year ended Dec. 31, 1935, states that the balance standing to the credit of the profit and loss account is £10,290, after payment of an interim dividend of 4% less income-tax. The Directors recommend the declaration of a final dividend of 4% for the half-year, making 8% for the year less income-tax. The Directors record with great regret the death on Nov. 22 last of their former Chairman, Mr. R. R. I. Russell. There has been an increase of 4,555,500 cu.ft. in the sale of gas, equal to 4·3% over the year 1934. Negotiations are in progress for a scheme for the amalgamation of this Company with the Sandown Gas and Coke Company, Ltd., and in due course the stockholders' approval will be sought.

South Staffordshire Mond.

The report of Directors of the South Staffordshire Mond Gas Company for the year ended Dec. 31, 1935, states that the amount of fuel gasified during the year is 9½% more than last year, while the cost of fuel gasified is 14% more than in 1934. The gas distributed during the year is 13% more than during 1934. The gross profit for the year is £24,013; deducting prior lien and debenture stock interest, £12,917, leaves the net profit for the year £11,096. The amount brought forward from the previous year was £18,632, which makes the amount of undivided profit standing to the credit of the profit and loss account £29,728. The Directors recommend that a dividend of 6% (less tax) for the year 1935, be paid to holders of cumulative preference shares on the register at Feb. 17, 1936, and that a dividend of 1¼% (less tax) be paid to holders of ordinary shares on the register at Feb 17, 1936, the warrants for both classes of shares to be posted on Feb. 29, 1936.

Southampton.

The report of the Directors of the Southampton Gas Light and Coke Company for the year ended Dec. 31, 1935, states that interim dividends at the maximum rate of 2¾% on the preference stock and at the basic rate of 2¼% on the ordinary stock, less income-tax, were paid on Sept. 2 last, and the Directors now recommend that final dividends at the rate of 2¾% on the preference stock and 2¾% on the ordinary stock, both less income-tax, be paid on March 2 next, making the dividends for the year at the rates of 5½% on the preference stock and 5¼% on the ordinary stock. In accordance with the provisions of the Southampton Gas Order, 1933, the payment of an additional ¼% dividend on the ordinary stock will entail the setting aside of a similar sum—namely, £1,619 7s.—for the benefit of the Company's employees under agreement. The increase in the sales of gas for the year amounted to 65,438,400 cu.ft. or 4·01%, and the sales of gas cookers and other appliances have been well maintained. Negotiations are now in progress for the acquisition of the Gas Undertaking of the Winchester Water and Gas Company, and an Extraordinary General Meeting of the proprietors will be called in due course to approve the terms of the transfer.

Sunderland.

The report of the Directors of the Sunderland Gas Company for the year ended Dec. 31, 1935, states that the profit and loss account shows that after deducting interim dividend there is an available balance of £24,361, out of which the Directors recommend the payment of a final dividend of £3% (less income-tax)

making £6% for the year, payable on March 10, leaving £15,374 to be carried forward.

Weymouth.

The report of the Directors of the Weymouth Consumers' Gas Company for the year ended Dec. 31, 1935, states that the sales of gas again show an increase, the amount sold for the year being 1,323,967 therms. This, compared with the previous year, shows an increase of 53,352 therms, which is equivalent to 4·2%. The sales of appliances during the year reached record figures. This, in conjunction with the sales of the previous year, is very gratifying. After providing for the interest on the debenture stocks, the balance at the credit of the net revenue account is £8,447, out of which the Directors recommend the payment of the following dividends: On the ordinary stock at the rate of 6% per annum, less income-tax, less the interim dividend already paid to June 30, 1935. On the 5½% redeemable preference stock at the rate of 5½% per annum, less income-tax, less the interim dividend already paid to June 30, 1935.

Ministry of Health Enquiry into Rotherham Loan Application

Mr. J. W. Mason (Inspector of the Ministry of Health) conducted an Enquiry at Rotherham on Jan. 24 into the application of the Rotherham Corporation for a loan of £1,100 for the purchase of land for the Gas Undertaking, and for £51,800 for the erection on the land of a waterless gasholder and other plant, for two trunk gas mains, and for incidental works. There was no opposition.

The Borough Treasurer (Mr. R. G. Nicholson) informed the Inspector that the loan charges would not involve any extra charge on the rates. The additional working expenses, he was given to understand, would be so small as to be almost negligible.

Mr. E. Bellingham (Assistant Town Clerk) stated that all the necessary consents had been obtained. The original application was for sanction to borrow £1,100 for the acquisition of four acres of land, and then, before application was made for sanction to the loan for the gasholder and works, it was decided to obtain a further four acres of land adjoining at the same price and this was included in the £51,800.

The Rotherham Gas Undertaking had a very ancient history, said Mr. Bellingham. It was the oldest undertaking of the borough, and was originally authorized by an Act of 1801, but its history, so far as they were concerned, really began in 1870, when it was acquired by the local authority. From then it developed until the time of the War, and since that time its development had gone on with astonishing rapidity.

The figures of the number of consumers and the gas sales during different years clearly showed the progress which had been made. In 1914 the number of consumers was 16,861, and the gas sold amounted to 308 million cu.ft. Ten years later, in 1924, there were 17,290 consumers, and in that year the gas sold amounted to 310 million cu.ft. By 1930 the number of consumers had mounted to 21,612, and the gas sold was 628 million cu.ft. Since 1930, went on Mr. Bellingham, the progress had been little short of phenomenal, and the estimated figures for 1936 were that there would be 26,500 consumers, and that 1,300 milllion cu.ft. of gas would be sold.

The Corporation did not make gas itself, except in case of an emergency. At the present time they were drawing gas from three coke ovens.

The Corporation had a water gas plant which was used in times of emergency.

Sources of Supply.

The Corporation could draw a maximum of 2,250,000 cu.ft. a day from the Silverwood coke ovens, a maximum of 2 million cu.ft. per day from the Rotherham Main coke ovens, and a maximum of 3 million cu.ft. per day from the South Yorkshire Chemical Works coke ovens. They were not actually drawing up to these limits.

The Corporation's actual output of gas during the present winter period reached a maximum of 5 million cu.ft. during 24 hours.

Mr. J. T. Haynes (Engineer and Manager of the Gas Department) interposed to state that during the present week 5,750,000 cu.ft. had been reached.

The present gas storage facilities, continued Mr. Bellingham, were in three, or actually four holders. There was the No. 1 holder, which was already existing in 1870, and which had a capacity of 190,000 cu.ft. The No. 2 holder was built in 1873, and re-built in 1893, and had a capacity of 950,000 cu.ft.; and the No. 3 holder, which was built in 1902, had a capacity of 1,100,000 cu.ft.

At Conisbro', which was an urban district outside the limits of supply, there was a holder built in 1905, with a capacity of 100,000 cu.ft.

Each of these holders, when partially deflated, actually gave a pressure which was too low to supply the town with gas. They could not be used to full capacity at the present time. The effective storage capacity was equal only to about eight hours' supply, instead of the generally recognized standard of 24 hours' supply.

The difficulty in this respect was that in Rotherham there was a large industrial load, much of which was a 24 hours' load. In practice, the holder capacity was even less than it appeared. The use of gas for industrial purposes seemed to be extending very rapidly, and the work involved was of national importance. The Rotherham Gas Engineer felt that the supply might be prejudiced if it was not possible to have better holder capacity.

A number of sites were considered by the Rotherham Council for additional holder storage, and it was considered better to have the new gasholder farther away from the centre of the town, where it might be as æsthetically innocuous as possible and also provide for possible further development of the gas plant. At present it was only proposed to use the site for storage purposes, but there was a possibility that the present situation of the gas-works might become undesirable and that it might become desirable to move the plant to a new site.

Mr. Bellingham explained further that provisional tenders had been invited for a gasholder with a capacity of 2 million cu.ft. The Council had decided that the most satisfactory type of holder would be the waterless type.

When the Enquiry was closed the Inspector visited the proposed site.

Book Reviews

The Chemistry and Technology of the Water Gas Process*

This recent book on the subject of water gas commences with the following quotation of a statement made by that eminent chemist Doebereiner in 1816. "I have found that charcoal and water by mutual reaction at a high temperature give rise to the best and purest combustible gas and, had I resources to prosecute these researches further and to develop them for the use of mankind, I should, perhaps, be in a position to practise the manufacture of illuminating gas in a better and more simple manner than do the English from their coals."

It has been left to others, and many have collaborated in the development, to bring the manufacture of water gas to reality though, in most cases, this gas is used as an adjunct to and not as a competitor of coal gas.

It may safely be said that the present book is one for which the Gas Industry has long been waiting, for the author has covered the subject of water gas in a manner never before attempted. The contents are divided into two sections, theory and practice. In the first section, a historical account is given of all the important investigations which have served, in their totality, to provide us with our present working hypothesis as to the course of the water gas reaction. The contribution of each investigator to our knowledge of the subject is critically discussed and a clear statement showing the exact significance of the work, what it proved and what still remained to be proved, is made.

In the practical section, the historical development of the art of blue water gas manufacture is first traced. The efficiency of the blow stage is high at low temperatures and falls off at a gradually decreasing rate as the temperature rises from 650° to 1,700° C. The efficiency of the run stage

* Wassergas. Chemie und Technik der Wassergasverfahren. By Paul Dolch. [Leipzig, 1936, Johann Ambrosius Barth. Pp. vi. + 268. Price, R.M. 17 bound; R.M. 15·60 unbound.]

rises rapidly from 700° to 800° C., reaches a maximum at about 1,000° C. and then decreases very slowly. The overall efficiency rises sharply to a maximum at 800° C. and then falls slowly and regularly as the temperature increases. Originally, working temperatures above 1,000° C. were the rule and overall efficiencies were low even though the run stage was carried out at high efficiency. Next came the period of the Dellwik-Fleischer system with working temperatures below 750° C. In view of the rapidity with which the efficiencies change with temperature in this range, this system is very sensitive to small temperature fluctuations. Finally, came the system in which the use of medium temperatures enabled the highest overall efficiency to be obtained.

The three periods are characterized by special features as regards the duration of the blow and run stages and the rate of admission of air and steam. In the early period, the blow was of long duration and the run of short duration with a high rate of steam admission. Conditions were reversed in the Dellwik-Fleischer system, a short blow with a high rate of air admission being recommended and a long run with a low steam velocity. Finally, we reach the stage of the short blow and run.

As was to be expected, main attention is paid by the author to the conventional method of water gas production—*i.e.*, in generators heated internally by the air blast. Consideration is, however, also given to externally heated generators, in which connection reference is made to recent developments in the production of gas for use in syntheses. Other subjects discussed include complete gasification, the continuous production of water gas by use of oxygen and by the re-circulation system and the Winkler generator.

Many calculations are set out and will be found very helpful. A few arithmetical errors are, however, to be found. Some of the literature references are given in a misleading manner since the author was apparently unaware that several journals issue more than one volume each year. For example, the reference to the work of Cobb and Marson is given as Gas J., 1927, 895, without any indication as to which of the four volumes published during the year is in question. These faults do not, however, detract appreciably from the value of the treatise.

The book can be strongly recommended and the accumulated experience set out in it should prove invaluable to those who contemplate further researches into the water gas reaction or its practical application.

There are, indeed, in the Gas Industry in this country and the United States, many to whom the book would be of interest or use could they but understand the language in which it is written. It is, therefore, much to be hoped that arrangements may be made for the preparation of an English translation and that, too, without undue delay.

Gas and Water Engineers' Calendar, 1936*

Once again the revision of this Calendar is confined to the first part—namely, to the sections devoted to legislation and particulars of undertakings. For those who require the second part, which consists entirely of scientific and technical information, the 1929 edition is still available.

A new feature of the 1936 edition, and one that will be greatly welcomed, is a complete list of the German towns and villages which have no gas undertakings of their own but are supplied from a grid or from a larger town. The list is a very formidable one. Its utility is increased by the provision of key numbers indicating the sources of supply of the gas.

As is usual, particulars of the output, ownership, and chief officials of the gas, electricity, and water undertakings of twenty Continental countries are to be found in the Calendar. In view of the large number of alterations which have again become necessary, those in commercial contact with the Continent will do well to secure a copy of the 1936 Calendar.

A point that may be mentioned is that it is now compulsory for all issues of German periodical publications to contain a statement of circulation figures. It appears that the present edition of the Calendar is one of 1,620 copies in comparison with an average circulation of 3,400 copies in the case of *Das Gas- und Wasserfach* and of 6,000 copies for the Annual Meeting number. As is well known, the Calendar is an official publication of the German Association of Gas and Water Engineers and *Das Gas- und Wasserfach* is its journal.

* Kalender für *Das Gas- und Wasserfach*, 59th Edition, 1936 [Munich and Berlin: R. Oldenbourg. Part I., pp. 420; price RM. 5, bound]. 282C

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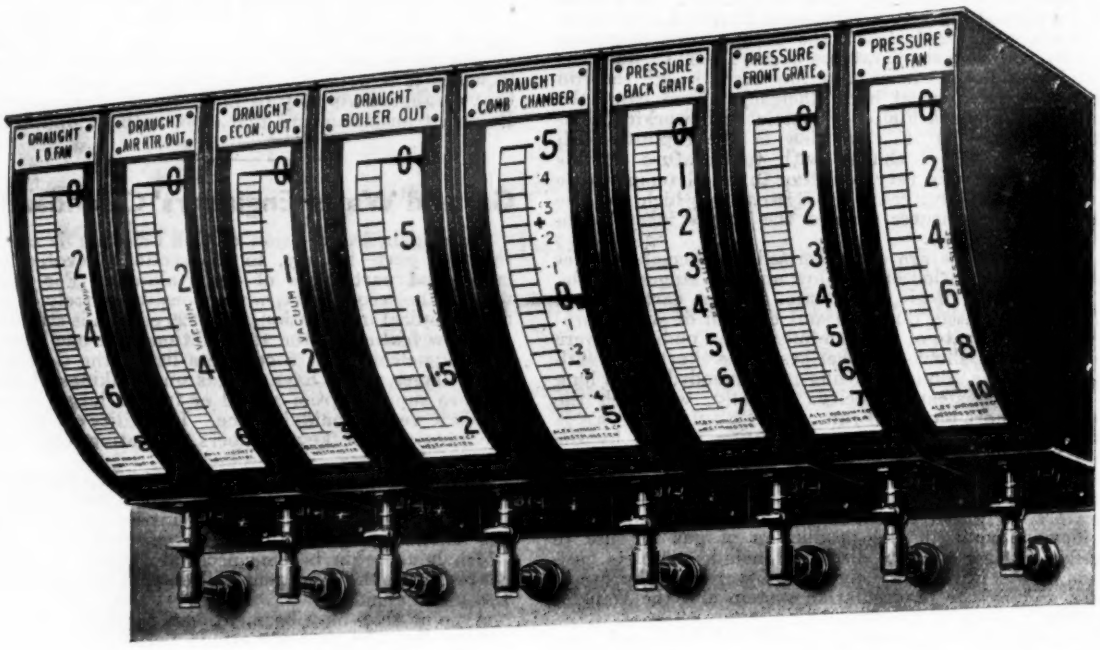
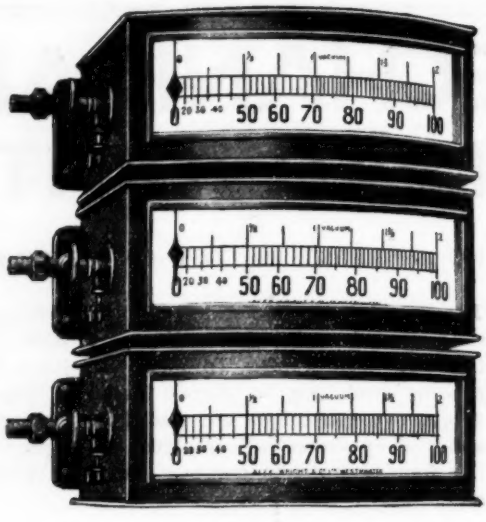


GAUGE BATTERIES



No. 3. Simmance Patent Dead-Beat Indicators, edgewise-scale patterns. Top illustration shows a group of eight vertical-edgewise gauges and lower illustration shows a group of three horizontal edgewise gauges. Either form can be supplied for usual ranges up to 5 lbs. per square inch pressure. All points are provided with two-way vent cock, zero-adjusting screw and needle valve. Metal cases, stove enamelled dark green or other colour. These gauges can be supplied for semi-flush mounting on panels, with back connections. It will be apparent that these "edgewise" gauges lend themselves readily to a compact arrangement of a number of units. Refer to D.B.I. 938 (top) or D.B.I. 934 (lower illustration).

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Gas Markets and Manufactures

Stock Market Report

(For Stock and Share Lists, see later pages)

There was little change in the general conditions on the Stock Exchange last week. Profit-taking in the more speculative sections was perhaps on a larger scale and brought about some rather erratic movements in prices, but otherwise there were no special features, and business closed with a confident tone. Home rails were again active and the majority of preference issues further improved, though a sharp fall occurred in Transport "C" on the reference made in the report to increased expenses. In the industrial section the bulk of the business continued to centre round aviation, iron and steel, and oil shares, while interest in rubbers was stimulated by another rise in the price of the commodity.

With one exception, the reports and accounts from the various companies so far received indicate a further successful year for gas and a consequent maintenance of dividend disbursements. It is agreeable to note that the Directors of the Watford and St. Albans Company have decided to increase the final payment from £3 7s. 6d.% to £3 12s. 6d.%, making 7% for the year against 6¾% for 1934. The Company's stock, which at the time of writing is still *cum* div., was marked up 2 points to 155-160 on the announcement. At this price the yield on the increased dividend basis for the year works out at £4 5s. 8d.%. In this connection, it may be worth noting that Croydon sliding-scale stock, on which a similar rate of dividend was paid in 1934, is also still *cum* div. but is quoted 4 points lower at 151-156. Other recent dividend announcements included the following, all of which are at the same rates as those paid for 1934:

—	1st Half.	2nd Half.	Year 1935.
	%	%	%
Bath	2½	3	5½
Cambridge	5	5	10
Cardiff	3	3	6
Chester	2⅞	3⅛	5¾
East Surrey "B"	3	3	6
Great Yarmouth	4¼	4¼	8½
Hampton Court	3⅝	3⅝	7¼
Newcastle	2⅞	2⅞	5⅞
Portsmouth	4¼	4¼	8½
Scarborough	2½	3½	6
South Suburban	3	3	6
Tottenham	3⅜	3⅜	6¾
Uxbridge	3½	3½	7
Wakefield	2½	4	6½
Weymouth	3	3	6
York	2	3	5
Yorktown	3¼	3¼	6¼

Current Sales of Gas Products

The London Market for Tar Products.

Feb. 10.

The prices of tar products generally remain unchanged as under:

Pitch, 43s. to 45s. per ton f.o.b.

Creosote, about 5½d. per gallon.

Refined tar is now 3⅝d. to 4d. per gallon in bulk at makers' works.

Pure toluole, 2s. 9d. to 2s. 10d.; pure benzole, 1s. 7d. to 1s. 8d.; 95/160 solvent naphtha, 1s. 8d. to 1s. 9d.; and 90/160 pyridine, about 4s. 9d.—all per gallon naked at makers' works.

Tar Products in the Provinces.

Feb. 10.

The average prices of gas-works products during the week were: Gas-works tar, 24s. 3d. to 29s. 3d. Pitch—East Coast, 42s. 6d. to 45s. f.o.b. West Coast—Manchester, Liverpool, Clyde, 42s. 6d to 45s.* Toluole, naked, North, 2s. 2d. to 2s. 4d. Coal-tar crude naphtha, in bulk, North, 8d. to 8¼d. Solvent naphtha, naked, North, 1s. 6d. to 1s. 6½d. Heavy naphtha, North, 1s. to 1s. 1d. Creosote, *ex* works, in bulk, North, liquid and salty, 4⅜d. to 4⅝d.; low gravity, 4⅜d. to 4⅜d. Heavy oils, in bulk, North, 4¾d. to 5d. Carbolic acid 60's, 2s. 4d. to 2s. 6d. Naphthalene, £19 to £21. Salts, 95s. to 100s., bags included. Anthracene, "A" quality, 2½d. to 3d. per minimum 40%, purely nominal; "B" quality, unsalable.

* All prices for pitch are now quoted on the basis of f.o.b. In order to arrive at the f.a.s. value at any port it will be necessary to deduct the loading costs and the tolls whatever they may be.

Tar Products in Scotland.

GLASGOW, *Feb.* 8.

Business has been quite brisk during the week and there is evidence of steadier conditions prevailing for some time.

Crude gas-works tar.—The actual value is 30s. to 31s. per ton *ex* works in bulk.

Pitch.—This is a dull feature of the market and prices are nominal at 35s. to 37s. 6d. per ton f.o.b. Glasgow for export and 35s. per ton *ex* works in bulk for home trade.

Refined tar is still on offer at 2⅝d. to 3d. per gallon, filled into buyers' packages at makers' works for delivery both prompt and forward.

Creosote oil.—Demand continues about equal to supply and prices are unchanged as follows: B.E.S.A. Specification, 5¼d. to 5⅜d. per gallon; low gravity, 5½d. to 5⅝d. per gallon; and neutral oil, 5½d. to 5⅝d. per gallon; all f.o.r. in bulk.

Cresylic acid.—While a fair volume of business has taken place during the week prices remain unaltered as follows: Pale, 97/99%, 1s. 5d. to 1s. 5½d. per gallon; dark, 97/99%, 1s. 3d. to 1s. 3½d. per gallon; and pale, 99/100%, 1s. 5d. to 1s. 6d. per gallon; all *ex* works naked.

Crude naphtha.—Available supplies command 5⅛d. to 5¾d. per gallon, according to quality and district.

Solvent naphtha.—90/160 grade is 1s. 4½d. to 1s. 5½d. per gallon, and 90/190 heavy naphtha is 1s. to 1s. 1d. per gallon.

Motor benzole is steady at 1s. 3½d. to 1s. 4d. per gallon in bulk at makers' works.

Pyridine.—90/160 grade is 4s. 6d. to 5s. per gallon, and 90/140 grade 5s. to 5s. 6d. per gallon.

Benzole Prices.

These are considered to be the market prices for benzole at the present time:

	s. d.		s. d.	
Crude benzole	0 9½	to	0 10	per gallon at works
Motor ,,	1 3	,,	1 3½	,, ,, ,,
90% ,,	1 4	,,	1 4½	,, ,, ,,
Pure ,,	1 7½	,,	1 8	,, ,, ,,

Contracts Advertised To-Day

Boiling Rings.

Port Talbot Gas Department. [p. 390.]

Coal.

Ashford Gas Department. [p. 389.]

Cocks and Taps.

Lincoln Gas Department. [p. 390.]
Port Talbot Gas Department. [p. 390.]

Fires and Cookers.

Lincoln Gas Department. [p. 390.]

Gasholder and Tank.

Stretford and District Gas Board. [p. 389.]

Lighting Goods (Burners, Mantles, Glassware, Pendants, Fittings, &c.).

Lincoln Gas Department. [p. 390.]
Port Talbot Gas Department. [p. 390.]

Locks for Meters.

Lincoln Gas Department. [p. 390.]

Meters.

Port Talbot Gas Department. [p. 390.]

Meter Repairs.

Lincoln Gas Department. [p. 390.]

Oxide of Iron.

Lincoln Gas Department. [p. 390.]

Pipes, Fittings, &c.

Lincoln Gas Department. [p. 390.]
Milford Haven Urban District Council. [p. 390.]
Port Talbot Gas Department. [p. 390.]

Stores (Oils, Ironmongery, Sulphuric Acid, &c.).

Lincoln Gas Department. [p. 390.]
Port Talbot Gas Department. [p. 390.]

Washing Machines and Boilers.

Lincoln Gas Department. [p. 390.]

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Issue. £	Stock or Share	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Feb. 7.	Rise or Fall on Week.	Transactions, Lowest and Highest Prices During the Week.
1,551,868	Stk.	Sept. 9	7	7	Alliance & Dublin Ord. ...	145—155	...	...
374,000	,,	Dec. 16	4	4	Do. 4 p.c. Deb. ...	95—100	...	100⅞
557,655	,,	Aug. 12	7	7	Barnet Ord. 7 p.c.	167—172	+2	170
300,000	1	Oct. 7	1/9⅞	1/4⅛	Bombay, Ltd.	1 15/16—1 1/16	...	26/9—27/6
178,480	Stk.	Aug. 12	9½	9½	Bournemouth sliding scale ...	222—232	...	...
550,050	,,	,,	7	7	Do. 7 p.c. max. ...	171—176	...	...
489,160	,,	,,	6	6	Do. 6 p.c. Pref. ...	150—155	...	153
50,000	,,	Dec. 16	3	3	Do. 3 p.c. Deb. ...	85—90	...	...
262,025	,,	,,	4	4	Do. 4 p.c. Deb. ...	105—110	...	108½
335,000	,,	,,	5	5	Do. 5 p.c. Deb. ...	125—130	...	...
357,900	,,	Aug. 12	7½	7½	Brighton, &c., 6 p.c. Con. ...	170—175	...	173½—174½
649,955	,,	,,	6½	6½	Do. 5 p.c. Con. ...	156—161	...	...
205,500	,,	,,	6	6	Do. 6 p.c. 'B' Pref.	142—147	...	...
855,000	,,	Sept. 23	8	7	British Ord.	152—157	...	155
100,000	,,	Dec. 16	7	7	Do. 7 p.c. Pref.	153—158	...	...
350,000	,,	,,	5½	5½	Do. 5½ p.c. 'B' Cum. Pref.	110—115	...	...
120,000	,,	,,	4	4	Do. 4 p.c. Red. Deb. ...	96—101	...	...
450,000	,,	,,	5	5	Do. 5 p.c. Red. Deb. ...	107—112	...	...
200,000	,,	,,	17/6⅔	3½	Do. 3½ p.c. Red. Deb. ...	98—100	...	...
100,000	10	22 May '33	6	4	Cape Town, Ltd.	1—3	...	...
100,000	10	6 Nov.'33	4½	4½	Do. 4½ p.c. Pref. ...	1—3	...	...
150,000	Stk.	Jan. 6	4½	4½	Do. 4½ p.c. Deb. ...	81—86	...	...
626,860	,,	Feb. 3	6	6	Cardiff Con. Ord.	131—136*	−2	...
98,936	1	Sept. 23	2/-	2/-	Colombo, Ltd., Ord.... ...	1⅛—1⅛	...	...
24,500	1	,,	1/4½	1/4½	Do. 7 p.c. Pref. ...	20/—22/-	...	...
609,204	1	Oct. 7	-/11·48	-/11·48	Colonial Gas Assn. Ltd. Ord.	19/6—21/6	...	...
296,053	1	.	1/3·30	1/3·30	Do. 8 p.c. Pref.	24/6—26/6	...	...
1,775,005	Stk.	Feb, 3	5	5	Commercial Ord.	98—103*	−2	102—103
620,000	,,	Dec. 2	3	3	Do. 3 p.c. Deb. ...	85—90	...	...
286,344	,,	Aug. 12	5	5	Do. 5 p.c. Deb. ...	121—126	...	154
807,560	,,	Aug. 12	7	7	Croydon sliding scale ...	151—156	...	116½—117½
569,590	,,	,,	5	5	Do. max. div.	115—120	...	...
620,385	,,	Dec. 16	5	5	Do. 5 p.c. Deb.... ...	121—126	...	...
239,000	,,	Feb, 3	5	5	East Hull Ord. 5 p.c.... ...	107—110*	−2	...
181,625	,,	Aug. 12	6	6	East Surrey Ord. 5 p.c. ...	132—137	...	...
175,609	,,	Dec. 16	5	5	Do. 5 p.c. Deb.	122—127	+2	124—125
19,284,128	,,	Feb. 3	5⅝	5⅜	Gas Light & Coke 4 p.c. Ord.	27/6—28/6a*	...	27/6—28/4½
2,600,000	,,	,,	3½	3½	Do. 3½ p.c. max.	88—91*	−1	90⅜—92
4,477,106	,,	,,	4	4	Do. 4 p.c. Con. Pref. ...	107—110†	...	108—109
8,602,497	,,	Dec. 2	3	3	Do. 3 p.c. Con. Deb. ...	90—93	...	91½—93½
3,642,770	,,	,,	5	5	Do. 5 p.c. Red. Deb. ...	117—120	...	118½—119
3,500,000	,,	,,	4½	4½	Do. 4½ p.c. Red. Deb. ...	114—117	...	115½—116
270,466	,,	Aug. 12	6	6	Harrogate New Cons. ...	132—137	...	...
140,000	1	Sept. 23	1/7½	1/7½	Hongkong & China, Ltd. ...	1¾—1⅞	...	...
213,200	Stk.	Aug. 12	6	6	Hornsey Con. 3½ p.c. ...	137—142	...	...
5,600,000	,,	Nov. 4	14	8	Imperial Continental Cap. ...	178—183	−1	178—182
223,130	,,	Jan. 20	3½	3½	Do. 3½ p.c. Red. Debs.	91—96*	...	...
285,242	,,	Aug. 12	8½	8½	Lea Bridge 5 p.c. Ord. ...	175—180	...	...
165,736	,,	Aug. 26	10	8	Maidstone 5 p.c. Cap. ...	182—192	...	...
63,480	,,	Dec. 16	3	3	Do. 3 p.c. Deb. ...	80—85	+1	83—84
75,000	,,	Dec. 2	†10	†10	Malta & Mediterranean ...	200—210	...	...
392,000	—	Oct. 1	5½	5½	Metropolitan (of Melbourne) 5½ p.c. Red. Deb.	102—107	...	...
231,978	Stk.	Aug. 12	5	5	M.S. Utility 'C' Cons. ...	110—115	...	...
818,657	,,	,,	4	4	Do. 4 p.c. Cons. Pref.	102—107	...	...
360,075	,,	Dec. 16	4	4	Do. 4 p.c. Deb. ...	103—108	...	...
148,955	,,	,,	5	†5	Do. 5 p.c. Deb. ...	120—125	...	...
125,000	—	Jan. 2	3½	3½	Do. 3½ p.c. Rd. Rg. Bds.	96—99	...	...
675,000	Stk.	Nov. 18	†‡3	†3	Montevideo, Ltd.	58—63	...	60—62½
225,000	,,	Aug. 12	7½	7½	North Middlesex 6 p.c. Con.	172—177	...	174—175½
396,160	,,	Feb. 3	5	5	Northampton 5 p.c. max. ...	103—108*	−2	...
300,000	,,	Nov. 4	†7	†9	Oriental, Ltd....	163—168	...	164
416,617	,,	Dec. 16	8	8	Plymouth & Stonehouse 5 p.c.	162—167	...	...
504,416	,,	Feb. 3	8¼	8¼	Portsm'th Con. Stk. 4 p.c. Std.	170—175*	−3	...
241,446	,,	,,	5	5	Do. 5 p.c. max. ...	108—113*	−2	...
114,000	,,	Feb. 3	5	5	Preston 5 p.c. Pref.	110—115*	+4	...
321,961	1	Sept. 23	...	1/-	Severn Val. Gas Cor. Ld. Ord.	22/—23/-	...	22/—22/4½
319,510	1	,,	...	-/10⅞	,, ,, 4½ p.c. Cum. Pref.	21/9—22/9	...	22/9
133,201	Stk.	Aug. 12	5	8½	Shrewsbury 5 p.c. Ord. ...	147—152	...	150—151
90,000	10	May 27	‡3	‡3½	South African...	3—4	...	...
1,061,779	1	Sept. 23	1/2⅜	1/2⅜	South East'n Gas Cn. Ld. Ord.	27/6—28/6	...	28/—28/6
845,016	1	,,	-/10⅜	-/10⅜	Do. 4½ p.c. Red. Cum. Pref.	22/3—23/3	...	22/9—22/10½
200,000	1	,,	...	4	Do. 4 p.c. Cum. Pref. ...	21/—22/-	+·/3	...
450,000	Stk.	Aug. 12	4	4	Do. 4 p.c. Red. Deb. ...	100—103	...	...
6,709,895	,,	Feb. 3	5	6½	South Met. Ord.	130—135*	−2	130—133½
1,135,812	,,	,,	6	6	Do. 6 p.c. Irred. Pf....	147—152*	−1	148—151
850,000	,,	,,	4	4	Do. 4 p.c. Irred. Pf....	103—107*	−2	...
1,895,445	,,	Dec. 16	3	3	Do. 3 p.c. Deb. ...	88—91	...	89½—90½
1,000,000	,,	Jan. 6	5	5	Do. 5 p.c. Red. Deb.	113—116	...	115½
1,543,795	,,	Feb. 3	6	6	South Suburban Ord. 5 p.c....	130—135*	−2	132—133
512,825	,,	,,	5	5	Do. 5 p.c. Pref....	120—125*	−1	123
500,000	,,	,,	4	4	Do. 4 p.c. Pref....	102—107*	−1	...
888,587	,,	Dec. 16	5	5	Do. 5 p.c. Deb....	123—128	...	124
250,000	,,	,,	4	4	Do. 4 p.c. Deb....	103—108	...	...
415,907	,,	Dec. 2	...	4	S. Western Gas & Water Ord.	22/6—24/6	...	...
160,523	,,	Oct. 21	...	...	Do. 4½% Red. Cum. Pref.	22/—23/-	...	...
110,000	,,	Dec. 16	4	4	Do. 4% Red. Deb. ...	98—103	...	...
647,740	,,	Feb. 3	5	5	Southampt'n Ord. 5 p.c. max.	113—118*	−2	116½
121,275	,,	Dec. 16	4	4	Do. 4 p.c. Deb.	98—103	...	...
350,000	,,	Feb. 3	5½	5½	Swansea 5½ p.c. Red. Pref. ...	111—116*	−2	114
200,000	,,	Dec. 16	6½	6½	Do. 6½ p.c. Red. Deb. ...	96—101	...	...
94,000	,,	...	...	...	Do. 3½ p.c. Red. Deb. ...	96—101	...	...
1,076,490	,,	Aug. 12	6⅔	6⅔	Tottenham and District Ord.	150—155	...	154—155
409,835	,,	,,	5⅓	5⅓	Do. 5½ p.c. Pref....	130—135	...	...
62,235	,,	,,	5	5	Do. 5 p.c. Pref. ...	120—125	...	123
334,615	,,	Dec. 2	4	4	Do. 4 p.c. Deb. ...	103—108	...	...
369,774	,,	Feb. 3	7	7	Uxbridge, &c., 5 p.c. ...	149—154*	−3	...
108,330	,,	,,	5	5	Do. 5 p.c. Pref. ...	115—120*	−2	...
1,340,521	,,	Feb. 3	7	7	Wandsworth Consolidated ...	158—163*	−1	159—162
1,371,373	,,	,,	5	5	Do. 5 p.c. Pref. ...	120—125*	−2	123
1,317,964	,,	Dec. 16	5	5	Do. 5 p.c. Deb. ...	123—128	...	...
338,300	,,	,,	4	4	Do. 4 p.c. Deb. ...	102—107	...	...
499,735	,,	July 8	6⅔	6⅔	Watford and St. Albans Ord.	155—160	+2	155½—156
200,000	,,	,,	5	5	Do. 5 p.c. Pref. ...	120—125	...	...
200,000	,,	,,	5⅓	5⅓	Do. 5½ p.c. Pref. ...	135—140	...	...
200,000	,,	Dec. 2	4	4	Do. 4 p.c. Red. Deb.	98—103	...	...
100,000	,,	,,	...	3⅓	Do. 3⅓ p.c. Red. Deb.	96—101	...	...
158,400	,,	Aug. 12	6b	5	Winchester W. & G. 5 p.c. Con.	114—119	...	...

a.—The quotation is per £1 of Stock. *b.*—Paid £3, including 10s. on account of back dividends. * Ex div.
† Paid free of income-tax. ‡ For year. § Actual for three months.

Stock and Share List continued overleaf.

B.I.F.
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STOCK AND SHARE LIST—Cont.

Stocks Officially Quoted on Provincial Exchanges

Issue. £	Stock or Share	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations. Feb. 7.	Rise or Fall on Week.	Transactions, Lowest and Highest During the Week.
BRISTOL EXCHANGE.								
347,756	Stk.	Feb. 3	5	6	Bath Cons.	124—126*	+1	...
1,667,250	,,	July 8	5	5	Bristol, 5 p.c. max.	120—122	+1	...
120,420	,,	Dec. 16	4	4	Do. 1st 4 p.c. Deb. ...	102—104	...	...
217,870	,,	,,	4	4	Do. 2nd 4 p.c. Deb. ...	102—104	...	...
328,790	,,	,,	5	5	Do. 5 p.c. Deb.	125—128	...	...
274,000	,,	Aug. 12	5	5	Newport (Mon.) 5 p.c. max....	113—118	...	...
13,200	12	Aug. 26	8½	7	Pontyp'l Gas & W. 10 p.c. 'A.'	14½—15½	...	...
13,600	10	,,	6	5	Do. 7 p.c. 'B.'	11½—12½	...	...
40,000	10	,,	6	5	Do. 7 p.c. 'C.'	11½—12½	...	...
140,778	Stk.	Aug. 12	5	5	Weston-super-Mare Cons. ...	115—117	...	...
64,338	,,	Dec. 16	4	4	Do. 4 p.c. Deb.	98—100	...	...
33,340	,,	,,	7½	7½	Do. 7½ p.c. Deb.	165—169	...	...
LIVERPOOL EXCHANGE.								
157,150	Stk.	Feb. 3	5	6½	Chester 5 p.c. Ord.	107½—112½*	−1½	...
92,500	,,	Dec. 16	4	4	Do. 4 p.c. Pref.	100—105	...	...
32,540	,,	,,	3½	3½	Do. 3½ p.c. Deb. ...	91—96	...	...
41,890	,,	,,	4	4	Do. 4 p.c. Red. Deb. ...	100—105	...	...
2,167,410	,,	Aug. 12	6	6	Liverpool 5 p.c. Ord. ...	134½—135½	...	...
245,500	,,	Dec. 16	5	5	Do. 5 p.c. Red. Pref. ...	103—108	...	...
306,083	,,	Jan. 6	4	4	Do. 4 p.c. Deb. ...	105—107	...	...
106,280	,,	Feb. 3	10	10	Preston 'A' 10 p.c. ...	202—212*	−4	...
188,219	,,	,,	7	7	Do. 'B' 7 p.c.	140—150*	−2½	...
NEWCASTLE EXCHANGE.								
122,577	Stk.	Aug. 12	8	8	Blyth 5 p.c. Ord.	151—153	...	...
732,000	,,	Aug. 12	5	85	Hartlepool G. & W. Cn. & New	118—120	...	...
2,061,315	,,	Feb. 3	5	5¾	Newcastle & Gateshead Con.	24 9—25 6d*	−/4½	...
682,856	,,	,,	4	4	Do. 4 p.c. Pref. ...	106—108*	−½	...
776,706	,,	Dec. 16	3½	3½	Do. 3½ p.c. Deb. ...	100½—101½	...	...
277,285	,,	Oct. 21	5	5	Do. 5 p.c. Deb. '43...	105—106	...	...
209,820	,,	Aug. 12	8½	8½	South Shields Con.	173—175	...	...
299,542	,,	Aug. 12	6	6	Sunderland 6 p.c. max. ...	129—131	...	...
NOTTINGHAM EXCHANGE.								
542,270	Stk.	Aug. 12	10	7	Derby Con.	175—185	...	...
55,000	,,	Dec. 16	4	4	Do. 4 p.c. Deb.	100—105	...	...
84,750	,,	Aug. 26	12	5	Long Eaton 'A' Ord. ...	150—160	...	...
50,000	,,	,,	10	4	Do. 'B' Ord. ...	130—140	...	...
20,000	10	June 7	5	5	Do. 5 p.c. Pref. ...	10—12	...	...
80,000	Stk.	,,	5	5	Do. 5 p.c. Deb. ...	117—122	...	...
SHEFFIELD EXCHANGE.								
10,000	Stk.	Aug. 26	10	10	Great Grimsby 'A' Ord. ...	220—230	...	...
6,500	,,	,,	10	10	Do. 'B' Ord. ...	220—230	...	...
79,000	,,	,,	10	10	Do. 'C' Ord. ...	205—215	...	...
1,736,968	,,	Aug. 26	6	6	Sheffield Cons.	143—145	...	...
95,000	,,	Dec. 16	4	4	Do. 4 p.c. Deb.	100½—102½	...	...

a The quotation is per £1 of Stock.

Supplementary List of Stocks and Shares not Officially Quoted

...	...	...	...	...	Ascot Ord.	...	...	...
...	...	...	...	...	Do. 5 p.c. Pref.	...	...	...
90,000	1	Nov. 4	5	5	Assd. Gas and Water Ord. ...	21/—23/-	...	22/4½
90,000	1	,,	4½	4½	Do. 4½ p.c. Cum. Pref. ...	21/9—22/9	...	22/—23/-
17,000	Stk	Aug. 26	8	8	Bognor Orig. Ord. 'A' ...	164—174	...	...
62,210	,,	,,	8	8	Do. New Addl. 'A' ...	164—174	...	...
87,160	,,	,,	7	7	Do. New 7 p.c. max. ...	142—147	...	...
37,440	,,	Feb. 3	10	10	Cam.Univ. & Town 10 p.c.max.	210—220*	−4	...
125,970	,,	,,	7	7	Do. 7 p.c. max.	158—163*	−3	...
39,025	,,	,,	5	5	Do. 5 p.c. max.	108—113*	−2	...
65,000	,,	Aug. 12	8½	7½	Eastbourne 'A' 5 p.c. ...	153—158	...	...
198,000	,,	,,	7	6	Do. 'B' 3½ p.c.	135—140	...	...
112,312	,,	,,	5	5	Do. 5 p.c. Pref.	120—125	...	...
130,000	,,	Dec. 16	5	5	Do. 5 p.c. Deb.	122—127	...	...
250,000	1	Nov. 18	...	4	Gas Consolidation Ord. ...	20/6—22/6	...	...
250,000	1	,,	...	4	Do. 4 p.c. Red. Cum. Pref.	19/6—20/6	...	19/6
117,251	Stk.	Sept. 23	8 1/10	8 1/10	Gosport District Cons. ...	177—182	...	...
73,350	,,	,,	5	5	Do. 5 p.c. Pref.	113—118	...	...
24,000	30	Feb. 3	8½	8½	Great Yarmouth 8½ p.c. max.	52—57*	−1	...
59,400	30	,,	7½	7½	Do. 7½ p.c. max.... ...	42—45*	−1	...
51,160	Stk.	Dec. 2	5½	5½	Do. 5½ p.c. Deb.... ...	123—128	...	...
152,600	,,	Aug. 26	8	8	Guildford Cons.	175—180	...	...
54,055	,,	,,	5	5	Do. 5 p.c. Pref.	116—121	...	...
68,250	,,	Dec. 16	5	5	Do. 5 p.c. Deb.	120—125	...	...
156,600	,,	Feb. 3	7½	7½	Hampton Court Cons. ...	167—177*	−3	...
81,660	10	Feb 4,'35	5	9	Leatherhead Ord.	16—17	...	...
107,960	10	Sept. 23	5	4	Mid Kent Ord.	9½—10½	...	...
230,445	Stk.	Aug. 12	10	10	Oxford & District Ord. ...	215—225	...	...
47,112	,,	,,	5	5	Do. 5 p.c. Pref.	117—122	...	...
50,000	,,	,,	6	6	Do. 6 p.c. Red. Pref. ...	115—120	...	...
126,193	,,	Nov. 18	7½	7½	Peterborough Ord.	160—170	...	169½—170
64,990	,,	Sept. 9	7½	6½	Redditch Ord.	116—121	...	...
66,850	,,	Aug. 12	7	7	Romford Ord.	167—172	...	...
160,000	,,	,,	4	4	Do. 4 p.c. Pref.	97—100	...	...
44,000	,,	Sept. 23	5	5	Do. 5 p.c. Deb.	122—127	+1	125
10,950	,,	Aug. 26	8	8	Ryde Ord.	168—173	...	...
136,191	,,	Feb. 3	5	7	Scarborough Ord.	128—138*	−2	...
27,825	,,	Feb. 3	8	8	Shanklin & Ventnor Cons. ...	152—162*	−3	...
40,643	,,	Sept. 23	7	7	Slough Ord.	150—155	...	...
221,000	,,	Dec. 16	5	5	Do. 5 p.c. Deb.	116—121	...	...
28,872	1	Nov. 4	5½	5½	S. Midland Gas Cpn.Ltd. Ord.	20/—22/-	...	...
28,866	1	Sept. 9	4½	4½	Do. 4½ p.c. Red. Cum. Pref.	20/—22/-	...	...
24,930	Stk.	Aug. 12	7	7	Southgate & Dist. 7 p.c. max.	150—155	...	...
162,500	,,	,,	5	5	Do. 5 p.c. Pref.	117—122	...	...
17,228	,,	Aug. 12	6	5	Swindon Cons.	113—118	...	...
160,425	,,	Dec. 16	5	5	Do. 5 p.c. Deb.	122—127	...	...
50,000	1	...	...	...	Utd. Kingdom Gas Cpn. Ord.	1 1/16—1 1/16	...	21/—22/-
760,910	1	Nov. 16	...	2½	Do. 4½ p.c. Prefd. Ord....	20/—21/-	−/6	...
110,910	1	,,	...	2½	Do. 4½ p.c. Cum. Pref. ...	20 6—21/6	...	20/9½—21/-
900,000	Stk.	,,	...	...	Do. 3½ p.c. Red. Deb. ..	98—101	...	...
130,000	,,	Feb. 3	5	8	Wakefield Ord.	137—142*	−7½	...
81,650	,,	,,	5	5	Do. 5 p.c. max.	101—106*	−2	...
82,000	,,	Feb. 3	6	6	Weymouth Ord.	106—111*	−2	...
70,000	,,	Feb. 3	4	6	York Cons.	105—110*	−2	...
390,000	,,	Dec. 16	5	5	Do. 5 p.c. Red. Deb. ...	103—108	...	...
133,640	,,	Feb. 3	6½	6½	Yorktown (Cam.) 5 p.c. Cons.	118—123*	−2	...
120,000	,,	,,	5	5	Do. 5 p.c. Pref.	115—120*	−2	...
35,000	,,	Dec. 16	5½	5½	Do. 5½ p.c. Deb.... ...	130—135	+4	...

"Modern Gas Fitting"

PART VI.

of

Gas Fitting Pamphlets

Another of the Popular Series of reprints, in booklet form, of the articles on "Modern Gas Fitting," contributed monthly to the

"GAS SALESMAN"

by

R. N. LeFevre, M.Inst.Gas E.

Officer-in-Charge of Training, The Gas Light and Coke Company, Assistant Head of Department of Gas Engineering and Supply, Westminster Technical Institute.

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